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A Coastal Atlas for Environmental Protecti
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Cover Photo
by Flip Nicklin
Narwhals crowd in an open ice lead
in Lancaster Sound.

91-03624/

LANCASTER SOUND REGION

A Coastal Atlas for Environmental Protection

by
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for
Environment Canada
Environmental Protection
Yellowknife, N.W.T.

March, 1990

Produced by
DF DICKINS ASSOCIATES LTD.
and
ESL ENVIRONMENTAL SCIENCES LIMITED
in association with
SL ROSS ENVIRONMENTAL RESEARCH LIMITED, LUTRA ASSOCIATES LTD.,
K.J. FINLEY ECOLOGICAL RESEARCH, EML ENVIRONMENTAL MAPPING, LGL LIMITED

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Published by
DF Dickins Associates Ltd.
503 - 21 Water Street
Vancouver, B.C.
Canada V6B 1A1

Printed in Canada by
Kits Graphics Ltd.

ISBN 0-921623-08-9

PREFACE

Study Team

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Funding Agencies

The majority of funding for this project was provided by Supply and Services Canada, Science Programs Branch via the Unsolicited Proposals Fund. Special thanks go to Jean Lacelle, director, Science Programs Branch, Ottawa, and to Don Pickles, contracting officer with the Science Programs Branch in Edmonton.

Other contributing agencies and departments were the following:

Canada Oil and Gas Land Administration, Ottawa, Duncan Hardie

Canadian Coast Guard Northern, Transport Canada, Ottawa, Ian Marr

Conservation and Protection, Western and Northern Region, Environment Canada, Edmonton, Bill Brakel

Environmental Emergencies Program Division, Environmental Protection, Environment Canada, Ottawa, Brian Mansfield

Environmental Emergencies Technology Division, Environmental Protection, Environment Canada, Ottawa, Ken Meikle

Environmental Services and Research Division, Northern Affairs Program, Indian and Northern Affairs Canada, Ottawa, Peter Ferris

Marine Parks Division, Canadian Parks Service, Environment Canada, Ottawa, Doug Yurick

Northwest Territories District Office, Environmental Protection, Environment Canada, Yellowknife, Scott Howarth

Regulatory and Native Affairs Division, Fisheries and Habitat Management, Fisheries and Oceans Canada, Winnipeg, Red Clarke

Funding for the community workshop on resource harvesting held in Pond Inlet was provided by two government divisions:

Policy and Planning Division, Department of Renewable Resources, Government of the Northwest Territories, Yellowknife, Ron Livingston

Regional Land Use Planning Division, Department of Renewable Resources, Government of the Northwest Territories, Yellowknife, Dave Jones

ACKNOWLEDGEMENTS

The study team gratefully acknowledges the following individuals and agencies for their contributions to the atlas:

The Canada Centre for Mapping, Energy, Mines and Resources, for supplying the 1:250,000 scale digital National Topographic Series (NTS) Maps used to produce the operational map bases. Mike Sheppard of Energy, Mines and Resources was especially helpful in coordinating the delivery of these digital files.

Neil Parker of the Atmospheric Environment Service, Edmonton, for suppiying the climatic data

Judy Marsh of the Archaeological Survey of Canada, Ottawa, for providing information on the archaeological sites in the region

Ian Stirling of the Canadian Wildlife Service, Edmonton, and Paul Latour and Mitch Taylor of the Department of Renewable Resources, Government of the Northwest Territories, for providing information on polar bear distributions and biology

Larry Dueck of Fisheries and Oceans Canada, Winnipeg, for providing information on marine mammal distributions in Admiralty Inlet

Murray Cameron of Norland Science & Engineering Limited, for providing copies of the NOAA imagery used in the atlas

Brian Smiley of the Institute of Ocean Sciences, Fisheries and Oceans Canada, for loaning a NOAA image

Lieutenant G.A. Sunderland and Captain N.J. Murgatroyd of the Canadian Armed Forces Northern Region (Air), for providing an inventory of the existing airstrips in the region

The residents of the Lancaster Sound region representing the communities of Resolute Bay, Arctic Bay, and Pond Inlet who participated in the Pond Inlet Workshop: Solomon Kalluk, Simeeonie Amagoalik, Anna Nungaq, Olayuk Naqitarvik, Charlie Inqorak, Glenn Williams, David Mablick, John Tongak, Ikee Milton, Sam Omik, Bert Dean, and Joe Krimmerdjuak (the interpreter)

The study team thanks the following individuals for providing detailed reviews of specific sections of the atlas:

Bill Brakel, Environment Canada - sensitivity ranking system
Anthony Gaston, Canadian Wildlife Service - bird resources
Bob Taylor, Atlantic Geoscience Centre - coastal type mapping
Neil Parker, Atmospheric Environment Service - climate

The study team would especially like to thank the Scientific Authority, David Tilden of Environmental Protection, Yellowknife, for his enthusiasm and continuous efforts in support of the project.

CONTENTS

PREFACE i

ACKNOWLEDGEMENTS ii

1.0 INTRODUCTION 1-1

Objectives 1-1
Contents and Organization 1-1
Sensitivity Ranking 1-2
Countermeasures Overview 1-3
Inuktitut Introduction 1-6
User's Guide - Physical Environment and Countermeasures 1-12
User's Guide - Shoreline and Offshore Sensitivity 1-14
User's Guide - Physical Environment & Logistics 1-16
User's Guide - Shoreline and Offshore Sensitivity 1-19

2.0 SUMMARY INFORMATION 2-1

Summary Map No.

1. Study Area 2-2
2. Areas of Extreme & High Sensitivity 2-4
3. Special Status Areas 2-6
4. Winter Ice Zones & March Ice Edges 2-8
5. Ice Drift 2-12
6. Ice Break-up 2-14
7. Open Water Season 2-16
8. Mean Tide Contours 2-17
9. Currents 2-18
10. Ice Freeze-up 2-20

3.0 REGIONAL INFORMATION 3-1

Regional Map No.

1. West Barrow Strait & Viscount Melville Sound Recurring Flaw Leads 3-2
1. East Lancaster Sound Recurring Flaw Leads 3-5
2. West Barrow Strait & Viscount Melville Sound Offshore Sensitivity - From Early May to Early August 3-6
2. East Lancaster Sound Offshore Sensitivity - From Early May to Early August 3-11
3. West Barrow Strait & Viscount Melville Sound Offshore Sensitivity - From Early August to Early October 3-14
3. East Lancaster Sound Offshore Sensitivity - From Early August to Early October 3-19
4. West Barrow Strait & Viscount Melville Sound Offshore Sensitivity - From Early October to Late December 3-22
4. East Lancaster Sound Offshore Sensitivity - From Early October to Late December 3-25
5. West Barrow Strait & Viscount Melville Sound Offshore Sensitivity - From January to Early May 3-26

5. East Lancaster Sound
Offshore Sensitivity -
From January to Early May 3-31

4.0 OPERATIONAL INFORMATION

Key Map 4-1

Operational Map No.		Physical Environment & Logistics	Shoreline Sensitivity
1.	Cape Sherard	4-2	4-5
2.	Dundas Harbour	4-6	4-9
3.	Powell Inlet	4-10	4-13
4.	Maxwell Bay	4-14	4-17
5.	Beechey Island	4-18	4-21
6.	Resolute Bay	4-22	4-25
7.	Polaris Bay	4-26	4-29
8.	Lowther Island	4-30	4-33
9.	Allison Inlet	4-34	4-37
10.	Bathurst and Melville Islands	4-38	4-41
11.	Cape Berkeley	4-42	4-45
12.	Cape Walker	4-46	4-49
13.	Aston Bay	4-50	4-53
14.	Cape Clarence	4-54	4-57
15.	Batty Bay	4-58	4-61
16.	Creswell Bay	4-62	4-65
17.	Fort Ross	4-66	4-69
18.	Fitzgerald Bay	4-70	4-73
19.	Port Bowen	4-74	4-77
20.	Cape York	4-78	4-81
21.	Cape Crauford	4-82	4-85
22.	East Brodeur Peninsula	4-86	4-89
23.	Yeoman Island	4-90	4-93
24.	Moffett Inlet	4-94	4-97
25.	Arctic Bay	4-98	4-101
26.	Cape Charles Yorke	4-102	4-105
27.	Navy Board Inlet	4-106	4-109
28.	Eclipse Sound	4-110	4-113
29.	Cape Hatt	4-114	4-117
30.	Tay Sound	4-118	4-121
31.	Pond Inlet	4-122	4-125
32.	Cape Walter Bathurst	4-126	4-129
33.	Cape Fanshawe	4-130	4-133
34.	Erik Harbour	4-134	4-137

5.0 REFERENCES 5-1

5.1 Introduction, Countermeasures Overview, Users' Guides 5-1

5.2 Physical Environment - Summary, Regional, and Appendix B 5-1

5.3 Physical Environment and Logistics 5-3

5.4 Offshore & Shoreline Environmental Sensitivity 5-4

APPENDICES

Appendix A Sensitivity Ranking System

Appendix B Climatic Data for Logistics

Appendix C Index of Place Names

TABLES

Table No.

1. Recommended Safe Ice Thickness for Over Ice Traffic 2-21

FIGURES

Figure No.

1.	Probability of Ice Edge Positions	2-9
2.	Ice Edge at Bylot Island (Position A), February 8, 1979 - NOAA Image	2-10
3.	Ice Edge at Prince Leopold Island (Position C), March 13, 1981 - NOAA Image	2-10
4.	Ice Edge at Griffith Island (Position D), January 21, 1982 - NOAA Image	2-10
5.	Ice Edge Moving East, January 20, 1983 - NOAA Image	2-10
6.	Calculated Ice Thickness for an Ice Edge at D	2-11
7.	Calculated Ice Thickness for an Ice Edge at C	2-11
8.	Calculated Ice Thickness for an Ice Edge at A	2-11
9.	Landfast Ice Thickness in Barrow Strait	2-13
10.	Landfast Ice Thickness in the Lancaster Sound Area	2-13
11.	Variability of Break-up, East Region: Winter Ice Edge Located at Prince Leopold Is. or Griffith Is.	2-15
12.	Variability of Break-up, West Region: for All Ice Edge Positions	2-15
13.	Variability of Break-up, East Region: Winter Ice Edge Located at Bylot Island	2-15
14.	Ice Bearing Capacity for Moving Loads	2-21
15.	Variability of Freeze-up	2-21
16.	December 9, 1975 - NOAA Image	2-22
17.	February 21, 1975 - NOAA Image	2-22
18.	April 17, 1976 - NOAA Image	2-22
19.	May 2, 1976 - NOAA Image	2-22
20.	June 14, 1975 - NOAA Image	2-23
21.	July 27, 1975 - NOAA Image	2-23
22.	October 15, 1976 - NOAA Image	2-23
23.	Ice Cover with North-South Leads Predominating, January 21, 1982 - NOAA Image	3-4
24.	Cross Fractured Ice Cover, January 27, 1982 - NOAA Image	3-4

1.0 INTRODUCTION

Objectives

The atlas is designed for planning and implementing year-round oil spill countermeasures in both the coastal and offshore areas of the Lancaster Sound region. The most important component of the atlas is the sensitivity ranking system which is used to numerically describe the relative sensitivity of the coastal and offshore areas of the region to the effects of a marine oil spill. The sensitivity ranking system is based on the human use, biological resources, and physical environment of the study area. The primary purpose of the ranking system is to provide users of the atlas with a tool to make critical oil spill cleanup decisions either on site in the event of a spill or in a planning and training situation.

This atlas is modelled on the *Environmental Atlas for Beaufort Sea Oil Spill Response* (5) which was completed by the study team for Environment Canada in 1987. Major differences and improvements centre around an expanded climate section, greater reliance on satellite imagery to display the ice environment, and provision of a fully interactive GIS computer-based version of the atlas. The sensitivity ranking system is refined and modified to reflect regional differences and a review of the different factors influencing the sensitivity values.

The Lancaster Sound region is internationally recognized as a unique environment and as possibly the most productive ecological environment in the Arctic. The Lancaster Sound Regional Land Use Planning Commission report (8) concludes that, while controlled development is essential for the economic well being of the region and its residents, no activity will be permitted to damage the renewable resources of the region. The protection of the interests of the Inuit in the event of a marine oil spill is of the highest priority.

The most important new commercial developments in the region centre around the expansion of the traditional summer shipping season by using more ice capable vessels and navigation systems. There are no plans for oil exploration in the immediate future. Current and projected marine activities in the region involve the transport of oil and petroleum products in and out of the region. The annual sealift supplies communities in the area with diesel fuel and gasoline. In addition, the two mines at Nanisivik and Polaris import their own fuel. Arctic crude oil is shipped annually to market through Lancaster Sound. In 1989, 300,000 barrels of oil were shipped south from the Bent Horn site (12).

Contents and Organization

The study area includes Lancaster Sound, Barrow Strait, Navy Board Inlet, Admiralty Inlet, Prince Regent Inlet south to Bellot Strait, the eastern entrance to Viscount Melville Sound as far west as Bridport Inlet on Melville Island, and Byam Martin Channel between Bathurst and Melville Islands. This area includes communities in the region, mine sites, oil production facilities, and tanker routes (exceptions are Grise Fiord and Jones Sound which are not covered by this atlas). The atlas area includes the waterways, shorelines, and coastal resources within the maximum tidal range.

The information in the atlas is organized by map scale moving from summary to regional to operational. Most of the information in the atlas is presented at the operational map scale. The operational maps are derived from digital files of the 1:250,000 topographic maps produced by Energy, Mines and Resources Canada and are reproduced in printed form at a scale of 1:375,000.

The following titles highlight the maps and information contained within the summary, regional, and operational map scales:

SUMMARY MAPS –1:5,000,000
Study Area
Overview of Extreme and High Sensitivity Areas
Special Status Areas
General Ice Conditions
- Winter Ice Zones and March Ice Edges
- Ice Drift
- Ice Growth
- Ice Break-up
- Open Water Season
- Ice Freeze-up

- Ice Bearing Capacity
- Satellite Images, Dec. 1975 to Oct. 1976

Mean Tidal Range
Currents

REGIONAL MAPS ~1:3,570,000
Recurring Flaw Leads
Offshore Sensitivity
- early May to early August
- early August to early October
- early October to late December
- January to early May

OPERATIONAL MAPS 1:375,000
Physical Environment and Logistics
- shoreline morphology
- shore access
- anchorages and safe havens
- airstrips
- description of countermeasures
- description of access limitations

Shoreline Sensitivity
- biological resources
- resource harvesting areas
- resource harvesting camps
- archaeological sites
- sensitivity rankings
- occurrence and timing of species and resource use
- environmental description

Sensitivity Ranking

The sensitivity ranking system used in the atlas describes the relative sensitivity of the shoreline and offshore areas of the Lancaster Sound region to the effects of marine oil spills. The sensitivity ranking system is based on a scheme developed for the *Environmental Atlas for Beaufort Sea Oil Spill Response* (5) to ensure continuity in the method for evaluating resource sensitivity to the effects of oil and the cleanup of marine spills.

Modifications to the system used here reflect unique differences in the biophysical and social environments between the two regions. For example, a new four-level ranking of the sensitivity values provides a better definition of the high priority areas.

The sensitivity ranking system developed for the Lancaster Sound region incorporates biophysical and social elements that are important from an oil spill response perspective. The components were ranked within three major sensitivity categories: human use, biological resources, and shore zone oil residence or marine oil residence.

Human use of the region was confirmed and modified as a result of a workshop held in December 1989 at Pond Inlet with representatives from all communities in the study area. One of the recommendations from the workshop was that all of Admiralty Inlet should be included in the atlas as the residents of Arctic Bay use the Berlinguet Inlet area to hunt ducks and geese. This was attempted; however, the digital maps could not be obtained in time for printing.

The biological resource category was modified (compared to the Beaufort Sea Atlas) by considering three levels of species abundance.

The shore zone oil residence index was also modified to account for the variability in wave exposure throughout the region. Wave exposure ranges from 18 weeks in eastern Lancaster Sound to several weeks at Bridport Inlet in Viscount Melville Sound.

The marine oil residence category was developed specifically for the Beaufort Sea Atlas and modified to reflect the different ice regimes of the Lancaster Sound region.

The study area was divided into sensitivity areas for the application of the sensitivity ranking system to determine the final sensitivity ranking. Sensitivity rankings for 108 shoreline areas are shown on the operational maps. Each shoreline area extends approximately 1 km offshore and extends backshore to include the maximum tidal range. Shoreline sensitivity values apply only from May to October,

when oil can be exposed along the shore or washed up along the shoreline.

Sensitivity rankings for the offshore areas are presented on the regional maps by season; early May to early August, early August to early October, early October to late December, and January to early May. Offshore sensitivity for the winter period, October to May, was ranked independently from shoreline sensitivity. Offshore sensitivity for the open water period, May to October, was ranked with shoreline sensitivity. The boundaries of the offshore sensitivity areas are based on the average locations of distinct seasonal boundaries between ice and open water zones. In the event of a spill, the actual offshore sensitivity boundaries may differ considerably from those shown in the atlas depending on the ice conditions present at the time.

The relative sensitivity of each shoreline and offshore area is represented by a single number that is calculated by weighing all the important environmental and social components of the region. This numerical value, ranked as extreme, high, moderate, or low, is shown on the sensitivity maps.

The final sensitivity rankings are intended to provide an on-scene commander and others in charge of responding to an oil spill with a system that ranks areas for protection and clean-up in the event of a spill where a large area is threatened. The rankings will also assist with decision making for oil spill response planning and training.

Real-time or contingency planning decisions must consider the sensitivity of each shoreline and offshore area on three levels.

First: the broad ranking (e.g. moderate) provides an immediate appraisal of the relative sensitivity.

Second: the elements which combine to make up the numerical sensitivity value provide the planners, local people, and cleanup crews with a clear picture of the important issues in a particular area (e.g., type of harvesting activity, number of species present). This information is needed to decide on the most appropriate cleanup technique to minimize local impact. The elements that make up the sensitivity value for each area are detailed in Appendix A.

Third: the timing of when different activities occur, or when different species use the area, allows an immediate assessment of whether the sensitivity ranking applies (in whole or in part) to a particular spill. For example, if fulmars are an important contributing element to the overall sensitivity value for an area, but the spill occurs when the fulmars are not present (confirmed by real-time observations), then the sensitivity (and priority) of that area, in terms of immediate clean up, is significantly reduced.

These types of decisions can only be made by considering the individual elements which contribute to the sensitivity value for each area in the context of when those elements are active (or present) relative to the timing of the spill.

Countermeasures Overview

Oil spill countermeasures considerations are described for each of the 34 operational maps in the atlas. The following is an overview of the basis for these considerations. It is not the intent of this atlas to provide a detailed analysis of the physical fate and effects of oil spilled in the Lancaster Sound region. Previous reports (e.g. 9) cover the case of a massive offshore oil well blowout in Lancaster Sound, a very different situation from the much smaller batch releases which could result from a vessel grounding or being damaged by ice. The most comprehensive scientific review of the long term fate and effects of oil spilled on a typical Baffin Island shoreline is contained in the results of the Baffin Island Oilspill Project (Arctic, 1987, Volume 40, Supplement 1). Countermeasures to deal with oil in a variety of arctic ice conditions are described in twelve years of conference proceedings supported by Environment Canada's Arctic Marine Oilspill Program (AMOP).

The low level of industrial and marine activity in the Lancaster Sound region leads to a very limited number of spill possibilities, both currently and in the foreseeable future. The main possibilities are those related to fuel resupply to communities, the two operating mines, and military

installations, and those resulting from the two or three annual transits by crude oil tankers. In each case the spill threat exists mainly during the brief open water season.

If a significant oil spill were to occur, there would be severe limits on the response operation. The remoteness of the region, the distance of existing response bases, and, most importantly, the general lack of marine support practically eliminates the possibility of an effective, initial marine-based response.

In spite of these limitations, there are a number of positive actions available: the cleanup team can initiate surveillance and tracking operations to follow the oil, burn oil in-situ where possible, and mobilize the necessary resources for a shoreline cleanup program. The possible range of countermeasures activities is outlined below.

Surveillance and tracking activities are necessary to determine the location and extent of spilled oil, particularly when long-term response is required. Remote sensing and surveillance overflights will rely on aircraft based at Resolute Bay, Arctic Bay, and Pond Inlet. Spills in ice or in open water at the onset of freeze-up will require a tracking program which uses satellite drift buoys.

The lack of suitable vessels will severely limit the effectiveness of conventional oil containment and recovery techniques. Spills that persist through freeze-up in areas west of Resolute Bay, or in channels such as Admiralty Inlet and Pond Inlet, may be available for containment and recovery the following melt season. Oil incorporated within thin ice in Lancaster Sound will likely be widely dispersed as the ice drifts east into Baffin Bay.

In-situ burning may be applicable, both as an initial response as well as for slicks that persist through winter. In the first instance, thick slicks may be amenable to burning, particularly if contained by pack ice in concentrations of 6/10 or greater or when wind-herded against close pack ice. Oil that persists through freeze-up in areas of stable winter ice cover may be available for burning the following melt season when released into leads and melt pools. Such an effort would require an over-winter program to track and monitor the oiled ice and, depending on the spill size and location, the stockpiling of ignition devices at strategic locations.

Dispersant use is likely to have limited applicability for spills in this region, due to the remoteness of the area and the time required to transport spraying equipment and dispersant supplies to the spill site. Except for spills of light fuel oil or crudes that do not emulsify quickly, the short period during which spilled oil would be dispersible will not allow an effective dispersant operation.

Shoreline protection countermeasures immediately following a spill will be severely limited by a lack of logistical support. Much of the coastline in this region is highly exposed to prevailing weather and seas as well as ice action, and may not require active cleaning efforts if not heavily contaminated. Where shoreline cleanup is required, priorities for restoration can be established by using both the environmental sensitivity and oil persistence factors contained in this atlas. Strong emphasis should be given to in-situ cleaning techniques (i.e., in-place washing, burning, bio-remediation) in order to minimize subsequent disposal problems.

This atlas does not recommend disposal sites; insufficient published information exists to make an informed selection without field surveys of the entire region, a process which can only be practically implemented if a spill occurs. Alternatives to long-term land disposal within the region include the trans-shipment of collected oily debris from temporary stockpiles to disposal sites in the south, or incineration on site.

Site access is critical to the success of any shoreline cleanup program in the Lancaster Sound region. The atlas displays three modes of access:

1. Marine access is based on navigational information, prevailing currents, tides, local ice conditions, shoal hazards, and known anchorages or landing sites.

2. Air access is based on the runway length, surface, and status of airstrips in the area.

3. Winter access is based on known over-ice or land travel routes.

Marine access is limited by the available open water season. Air access in most areas is limited to STOL aircraft or helicopters which restricts the available payload. Winter access over the land or ice is the only practical option for moving heavy equipment during much of the year (December to May). Access limitations and the short summer season will lead to shoreline cleanup operations extending over a minimum of two years in most spill situations.

Safe havens are areas where lightering and/or stabilization operations can proceed in calm and protected waters. The atlas recommends potential "safe havens" on the basis of the following criteria:

1. Sensitivity - the site must be in an area of low to moderate sensitivity based on the ranking system used in the atlas.

2. Access - the site must have sufficient charted water to allow access by deep draft vessels.

3. Shelter - the configuration and orientation of the bay or inlet must be such as to provide secure shelter from weather and seas to facilitate containment of any escaping oil.

1.0 ᐱᒋᐊᕐᓂᖓ

ᑐᕋᕐᕕᐅᔪᒪᔪᑦ

ᓄᓇᙳᐊᓕᐊᖑᔪᖅ ᑎᑎᕋᐅᔭᕐᑕᐅᑉᓗᓂ ᓴᖅᑭᑎᑕᐅᓯᒪᔪᖅ ᐸᕐᓇᒍᑕᐅᔪᓄᑦ ᐊᑐᕐᑕᐅᕙᔭᐅᑉᓗᓂᓗ ᖃᖓᑐᐃᓐᓇᖅ ᐊᕐᑯᔪᒥ ᐅᖅᓱᐊᓗᖕᒥᒃ ᑯᕕᔪᖃᕐᓂᐸᑦ ᐋᖅᑭᐅᒪᕚᓪᓕᕐᑕᐅᕙᔭᐅᑉᓗᓂ ᑕᒪᐃᓐᓂ ᓯᖁᒥ ᓯᖁᔭᐅᖏᓐᓂᕐᒥᓗ ᑖᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ ᓄᓇᖓᓂᓗ. ᓄᓇᙳᐊᓕᐊᖑᔪᒥ ᐱᓪᓕᐅᕚᖑᔪᖅ ᐃᒃᐱᒋᔭᐅᓴᕋᐃᓐᓂᐅᔪᖅ ᒪᓕᒃᑕᐅᕙᒃᑐᖅ ᐅᖃᐅᓯᖃᕈᔭᐅᑉᓗᓂ ᐃᒃᐱᒋᔭᐅᓴᕋᐃᑐᕐᔪᓂᒃ ᓯᖁᒥᑦᑐᓂᒃ ᓯᖁᒥᕆᑦᑐᓂᓪᓗ ᐅᓂᖅᑲᕐᑎᓪᓗᒋᑦ ᓄᓇᓕᖕᓂ ᐃᒪᕿᑦᑐᓂᓪᓗ ᑯᕕᔪᖃᕐᑎᓪᓗᒍ ᐅᖅᓱᐊᓕᕆᒥᒃ. ᑕᒪᓐᓇ ᐃᒃᐱᒍᓱᒃᓴᕋᐃᓐᓂᐅᔪᖅ ᐅᖃᐅᓯᐅᑎᓪᓗᒍ ᒪᓕᒃᑕᐅᖃᑕᐅᔾᔪᕆᒐᑦ ᐃᓄᐃᑦ ᓇᓂᑐᐃᓐᓇᖅ ᐊᑐᕐᐸᒃᑕᕆᓐᓂᒃ, ᐆᒪᔪᑦ ᖃᓄᐃᑦᑐᑐᐃᓐᓇᐃᑦ, ᐊᒻᒪᓗ ᐊᕙᓗᒥᐅᑕᖕᓱᐊᔪᑦ ᑕᐅᑐᖓ ᖃᐅᔨᓴᕐᑕᐅᓂᑯᑎᓪᓗᒍ ᒪᓕᒃᑕᐅᖃᑕᐅᔾᖑᕆᒐᑦ. ᐃᒃᐱᒍᓱᒃᓴᕋᐃᓐᓂᕐᒧᑦ ᐃᓕᖅᑯᓯᕐᓇᔭᐅᑉᓗᓂ ᐱᓕᕆᐊᖑᔪᖅ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᒐᖅ ᓄᓇᖑᐊᓂᒃ ᐊᑐᕐᐸᒃᑐᑦ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᕝᕕᐅᕙᔭᐅᑉᓗᑎᒃ ᓴᓗᒪᖅᓴᐃᒋᐊᖃᓕᕐᓂᐊᑉᑕ ᖃᒥᕐᓯᒪᔾᔭᑎᒥᓂᐊᕐᑕᕆᓐᓂᒃ ᐅᖅᓱᐊᓗᖕᒥᒃ ᑯᕕᔪᖃᕐᓂᕐᑎᓪᓗᒍ ᓂᕆᐅᓇᕆᑦᑐᒥᒃ ᐅᐊᕙᓘᓐᓃᑦ ᐸᕐᓇᐃᓯᒪᔭᓐᓇᕙᑉᓗᒋᑦ ᐃᓕᓐᓂᐊᕐᑎᕐᑎᓂᒃᑯᓗ ᐃᑲᔪᕐᑕᐅᔭᓐᓇᕙᑉᓗᒋᑦ.

ᓄᓇᙳᐊᓕᐊᖑᔪᖅ ᐋᖅᑭᒃᓯᕐᑕᐅᕙᓪᓕᐊᑎᓪᓗᒍ ᖃᐅᔨᒪᔭᐅᑎᑲᓪᓚᐅᕐᑐᑦ ᐊᕙᓗᒥᐅᑕᓄᑦ ᓄᓇᙳᐊᓕᐅᕈᑎᒥᒃ ᑐᒃᑑᔭᕐᑐᑉ ᐃᒪᓂ ᐅᖅᓱᐊᓗᖕᒥᒃ ᑯᕕᔪᖃᔭᕐᐸᑦ ᑭᐅᔾᔪᑕᐅᔭᕐᑐᒥᒃ ᓄᓇᙳᐊᓕᐊᖑᔪᒪᔪᒥᒃ (5) ᖃᐅᔨᓴᕐᑎᓄᑦ ᖃᐅᔨᓴᕐᑕᐅᕙᓪᓕᐊᕐᑐᖅ ᐃᖅᑲᐃᔭᕐᑎᒥᔭᐅᔪᓄᑦ ᐊᕙᓗᒥᐅᑕᓕᕆᓂᕐᒧᑦ ᑲᓇᑕᒥ 1987-ᖑᑎᓪᓗᒍ. ᖃᐅᔨᓴᕐᑕᓚᐅᕐᑐᓂᑦ ᐊᔾᔨᒋᔭᐅᖏᓗᐊᕐᓂᖅᓴᐅᕗᑦ ᓯᓚᐅᑉ ᐆᓇᕐᓂᖓ, ᖃᖓᑦᑕᕐᑎᑕᐅᓯᒪᔪᒃᑯᑦ ᑎᑎᕋᐅᓯᕐᑕᐅᓯᒪᔪᑦ ᐊᑐᕐᑕᐅᒥᐊᖅᑲᕐᓂᖅᐅᓂᖏᑦ ᑕᑯᔅᓴᐅᑎᑦᑎᓂᐊᕐᓗᑎᒃ ᓯᑰᑉ ᐊᕙᓗᒥᐅᑕᓇᔭᖏᓐᓂᒃ, ᐊᒻᒪ ᐊᑐᕐᑕᐅᒥᐊᖅᑲᕐᓂᖅᐅᑉᓗᓂ GIS ᖃᓇᑕᖕᖑᐊᑎᒍᑦ ᑎᑎᕋᐅᓯᕐᑕᐅᓯᒪᔪᑦ ᓄᓇᙳᐊᓕᐊᖑᔪᒥ. ᐃᒃᐱᒋᔭᖅᑲᕐᓴᕋᐃᖑᓇᔭᕐᑐᖅ ᓇᓃᓪᓚᖕᓕᑦ ᓇᓗᓇᐃᕐᑕᐅᒥᐊᖅᑲᓐᓂᕐᐸᖅ ᓄᑖᖑᓇᐊᕐᑕᐅᓯᒪᑉᓗᑎᓪᓗ ᑕᑯᔅᓴᐅᑎᑕᐅᓂᖅᓴᐅᑉᓗᑎᒃ ᓄᓇᐄᑦ ᐊᕕᒃᑐᖅᓯᒪᓂᖏᓐᓂ ᐊᔾᔨᒌᖏᓐᓂᐅᓗᐊᕐᑐᑦ ᐊᒻᒪ ᖃᐅᔨᓴᕐᑕᐅᓂᖅᐸᓪᓗᑎᒃ ᐊᔾᔨᒌᖏᑦᑐᑦ ᐱᔾᔪᑎᒋᔭᐅᓇᔭᕐᑐᑦ ᐃᒃᐱᒋᔭᐅᓇᔭᕐᑐᓄᑦ ᖃᓄᖅ ᐊᔾᔨᒌᖏᒃᑐᓂᒃ ᐃᒃᐱᒋᔭᖅᓴᔭᖕᖏᑦᑕ ᑕᑯᔅᓴᐅᑎᑕᐅᓂᖅᐸᓪᓗᑎᒃ.

ᑖᒃᑯᓇᑎᐅᑉ ᐃᒪᖓᓂ ᓄᓇᒥᔭᐅᔪᖅ ᐃᓕᑕᕆᔭᐅᓯᒪᔪᖅ ᐊᔾᔨᒋᔭᐅᖏᓐᖓᓂ ᐊᕙᓗᒥᑕᖓ ᐊᒻᒪ ᐃᓯᒪᒋᔭᐅᔪᖅ ᓯᓇᑐᐃᓐᓇᕐᓄᑦ ᐆᒪᔪᓄᑦ ᓂᕐᔨᑎᓄᑦ ᐃᓂᒋᔭᐅᕙᒌᖑᕆᐊᖅᓴᖑᓂᒃ ᓇᔪᕐᑕᐅᕙᒌᖑᕆᐊᖅᓴᖑᓂᒃ ᐅᑭᐅᕐᑐᒥ. ᑖᒃᑯᓇᑎᐅᑉ ᐃᒪᖓᓂ ᓄᓇ ᐊᑐᕐᑕᐅᕙᖕᓂᖓᓄᑦ ᐸᕐᓇᑎᑦ ᑲᑎᒪᔨᕆᕐᑕ ᐅᓂᖅᑲᖕᖑᑦ (8) ᐊᐅᓚᑕᐅᕐᑎᐊᕐᑐᑦ ᐋᖅᑭᒪᔭᐅᕐᑎᐊᕐᑐᑦ ᐱᓪᓚᐅᑎᑕᐅᑎᓪᓗᒋᑦ ᐱᔾᔪᑎᖃᕈᑕᐅᓇᓱᒃᑐᑦ ᕿᓇᐅᔾᔭᕈᑕᐅᓇᓱᒃᑐᑦ ᓄᓇᒥᔭᐅᔪᒥ ᐃᓄᖕᓄᑦᓗ, ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒥ ᓄᓇᓕᖕᓂ ᓄᓇᒥᐅᑕᓂᒃ ᐱᔾᔪᑎᒋᓪᓗ ᓯᖁᕐᓯᓇᓂᐊᕐᑐᑦ ᓯᕋᐃᓂᐊᕐᑐᑦ ᑲᔪᓯᑎᑕᐅᔪᓐᓇᕐᓂᐊᕐᓂᕐᓗᑦ. ᐃᓄᐃᑦ ᐱᔪᒪᔭᕆᑦ ᓴᐳᓐᓂᐊᕐᑕᐅᓂᕆᑦ ᓯᕗᓕᐅᑎᑕᐅᒪᓇᔭᑦ ᐳᕐᑐᓕᖑᓪᓗᑎᒃ ᐅᖅᓱᐊᓗᖕᒥᒃ ᑯᕕᔪᖃᔭᕐᓂᐸᑦ.

ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒥ ᐱᓪᓚᑲᓕᖑᔪᖅ ᐱᔾᔪᑎᒋᐊᕐᑎᑕᐅᓂ ᐱᓕᕆᐊᖑᕙᓪᓕᐊᔪᓂ ᐊᐅᔭᒃᑯᑦ ᐅᒥᐊᔾᔪᐊᒃᑯᑦ ᑎᑭᓐᓇᓯᑎᓪᓗᒍ ᑎᑭᑎᑕᐅᕙᒃᑐᑦ ᐱᓕᕆᐊᖑᓂᕆᑦ ᓯᑯᓂ ᓯᖁᕐᑎᓐᓇᐅᓐᓂᖅᓂᒃ ᐅᒥᐊᔾᔪᐊᓂᒃ ᐊᑐᕐᑳᓕᐊᔪᒪᓪᓚᑦ ᑕᒪᓐᓇ ᐱᓕᕆᐊᖑᔪᓂ ᐱᓪᓚᑲᓕᖑᓂᖅ ᐱᔾᔪᑎᒋᐊᕐᑎᑕᐅᔪᓂ. ᒫᓐᓇ ᐸᕐᓇᒃᓯᒪᔪᖃᕐᓂᖅ ᐅᖅᓱᐊᓗᖕᒥᒃ ᓯᕿᓂᐊᕐᓂᐊᕐᑐᓂ ᕿᓂᕋᔭᕐᑐᓂ ᓯᕗᓂᕐᑎᓐᓂ ᑐᓴᕐᒪᕆᓪᓗᑦ. ᒫᓐᓇᐅᔪᖅ ᐱᓕᕆᐊᖑᔪᑦ ᐊᒻᒪ ᐱᓕᕆᐊᖑᓂᐊᕐᓯᒪᔭᐅᔪᑦ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒥ ᒫᓐᓇᐅᔪᖅ ᓄᑦᑎᕐᓂᖅ ᐅᖅᓱᐊᓗᖕᒥᒃ ᐅᖅᓱᐊᓗᖕᓴᓕᓗ ᓄᓇᓕᒃᑯᑦ ᑎᑦᑎᕐᑎᕐᔪᑦ ᐊᒻᒪ ᓄᓇᐅᑦ ᐊᓯᐊᓄᑦ ᓄᑦᑎᕐᑎᕐᓇᖅᔪᑦ. ᐊᕐᕋᑐᑕᒫᖅ ᐅᒥᐊᕐᔪᐊᑦ ᑎᑭᕐᔪᑦ ᐊᑐᐃᓐᓇᐅᑎᑎᕐᔪᒧᑦ ᓄᓇᓕᖕᓄᑦ ᐅᖅᓱᐊᓗᖕᒥᒃ ᐊᒻᒪ ᓚᓴᓕᕐᒥᑦ. ᐊᒻᒪᓗ, ᐅᔭᕋᖕᓂᐊᕐᕕᐅᔪᖅ ᓇᓂᓯᕕᒃ ᐅᐸᓗᓐᓇᐊᕐᔪᐊᕐᓗ ᓇᖕᒥᓂᖅ ᐅᖅᓱᐊᓗᖕᒥᒃ ᐊᑐᕐᑕᐅᓴᒥᓂᒃ ᑎᑭᑎᑦᑎᕐᔪᖕᒪᑕ. ᐅᑭᐅᕐᑕᑐᒥ ᐅᖅᓱᐊᓗᖕᓴᖅ ᐅᒥᐊᕐᔪᐊᑦ ᐊᐅᓪᓚᑎᑕᐅᕐᔪᖅ ᐊᕐᕋᑐᑕᒫᖅ ᑕᐅᓪᓗᑎᒃ ᑕᒪᖕᖑᑎᑕᐅᕐᓗᓂ. 1989-ᒥ, 300,000 ᑲᑦᑕᐅᔭᐃᑦ ᐊᐅᓪᓚᑎᑕᓚᐅᕐᑐᑦ Bent Horn-ᒥᑦ (12).

ᐃᓗᐊᓃᑐᑦ ᐋᖅᑭᒪᓂᕆᔭᐅᔪᓗ

ᖃᐅᔨᓴᕐᑕᐅᔪᑦ ᐃᓚᖃᕐᑐᑦ ᑖᒃᑯᓇᑎᐅᑉ ᐃᒪᖓᓂ, ᖃᐅᔨᓴᕐᑕᐅᔪᑦ ᐃᓚᖃᕐᑐᑦ ᑖᒃᑯᓇᑎᐅᑉ ᐃᒪᖓᓂ, ᐱᐊᕋ ᓯᑐᕇᑦ (Barrow Strait), ᓀᕕ ᐳᐊᑦ ᐃᓪᓚᑦ (Navy Board Inlet), ᐊᑦᒪᕋᑎ ᐃᓪᓚᑦ (Admiralty Inlet), ᐳᕆᓐ ᕆᐄᔭᓐ ᐃᓪᓚᑦ (Prince Regent Inlet) ᓂᒡᓕᒥᐊᓄᑦ ᐱᓚᑦ ᓯᑐᕇᑦ (Bellot Strait), ᕖᑦ ᑳᐅᑦ ᒥᐅᕕᐅ ᓵᐅᓐ (Viscount Melville Sound) ᑎᑭᓪᓗᒍ ᐳᕇᑦ ᐳᐊᑦ ᐃᓪᓚᑦᒧᑦ (Bridport Inlet on ᒥᐅᕕᐅ ᐊᐃᓚᓐᒧᑦ (Melville Island) ᐊᒻᒪ ᐸᐃᐊᑦᑕ ᒫᑦᑎᓐ ᓴᓄ (Byam Martin Channel) ᐊᑯᓐᓂᖓᓂ ᕿᖓᐅᑉ ᐊᒻᒪ ᒥᐅᕕᐅ ᐊᐃᓚ (Melville Islands). ᑖᓐᓇ ᐃᓚᐅᑎᑦᑎᕗᖅ ᓄᓇᓕᖕᓂᒃ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒥ, ᐅᔭᕋᖕᓂᐊᕐᕕᖕᓂᒃ, ᐅᖅᓱᐊᓗᓕᕆᕝᕕᐅᔪᓂᒃ, ᐊᒻᒪ ᐅᖅᓱᐊᓗᒃᑕᕐᕕᖕᓂ ᐅᒥᐊᕐᔪᐊᑦ ᐊᖏᕐᕋᑎᒋᖕᓂᒃ (ᐃᓚᐅᒋᓪᓗᑎᒃ ᐊᐅᓯᐃᑦᑐᖅ ᐊᒻᒪ ᔮᓐᔅ ᓵᐅᓐ (Jones Sound) ᓄᓇᕗᑦ ᐊᑎᖓᓄᑦ ᐃᓚᐅᑎᑕᐅᕐᑐᑦ). ᓄᓇᕗᑦ ᐃᓚᖃᐅᔾᔪᑦ ᐃᒪᐃᑦ ᐊᖏᕐᕋᒋᖕᓂᒃ, ᓯᓈᐃᑦ ᖃᓂᒋᔭᕆᖕᓂ, ᓯᓈᓂ

ᐊᒻᒪ ᐅᓕᑦᑕᕐᓂᐅᔪᖅ ᑎᓂᑦᑕᕐᓂᐅᔪᖅ ᐃᓚᐅᑎᑕᐅᓪᓗᓂ.

ᓄᓇᕗᑦᑎᐊᒥ ᑐᓴᒃᓴᓕᐊᕗᔪᖅ ᐋᖅᑭᒃᓯᑦᑕᐅᓯᒪᕚ ᐱᖓᓲᓕᖓᐸᓗᓂ ᓄᓇ-ᕗᑦ ᓯᑯᒥ ᐃᓕᖅᑯᓯᐅᑦ ᑲᖏ ᐊᐅᓪᐸᓪᓕᐊᓕᕐᓂᖓ ᑕᖅᑭᐅᔪᓂ ᐊᒻᒪ ᓰᓇᒧᑦ ᐊᑐᕐᑕᐅᕙᓐᓂᐅᑦ ᑕᑯᒃᑕᐅᑎᑕᐅᑲᑕᐅᓪᓗᑎᒃ. ᑐᓴᒃᓴᓕᐊᕗᔪᑦᒍ ᓄᓇᕗᑦᑎᐊᓕᐊᕗᔪᒥ ᓰᓇᒧᑦ ᐊᑐᕐᑕᐅᕙᒥᐊᖅᓴᐅᓂᖅ ᐅᓂᒃᑲᓇᔭᐅᔪᑦ ᐅᖄ-ᐅᓯᐅᓗᐊᕐᓂᖏᐅᕚᑦ. ᓄᓇᕗᑦᑎᐊᑦ ᓴᖅᑭᑎᑕᐅᕙᓪᓕᐊᔪᑦ ᑕᑯᒃᓴᐅᑎᑦᑎᑉᓗᑎᒃ ᓇᓂ ᐊᑐᕐᑕᐅᕙᒥᐊᖅᓴᐅᖕᓂᒃ ᓴᖅᑭᑕᐅᕙᓪᓕᐊᒃᑲᑦᑐᑦ ᖃᓇᑕᖕᕗᐊᑎᒍᑦ ᓴᓇᔭᐅᑉᓗᑎᓗᒃ ᓈᓴᐅᑎᒃᑐᑦ 1:250,000 ᓇᓗᓇᐃᒃᑯᑕᐅᑦ ᓄᓇᖕ-ᕗᑦ ᐆᒻᒪᖅᑯᑎᓕᕆᔾᔪᑲᓂᑦ ᑲᓇᑕᒥᑦ ᓴᓇᔭᐅᓂᑯᑦ ᐱᓕᕆᐳᐃᐅᔪᒥᑦ ᑎᑎᕋᐅᔭᑦᑕᐅᓯᒪᔪᑦ ᑲᑯᖕᓴᐅᔪᑦ ᓇᓗᓇᐃᒃᑯᑕᖅᓯᓗᑎᒃ ᐊᑐᕐᓂᐅᑦ 1:375,000-ᓂᒃ.

ᐋᑖᓂ ᐅᓂᒃᑳᑦ ᓄᓇᕗᑦᑎᐊᑦ ᖃᓄᐃᑦᑕᕆᐊᖕᓴᐅᕐᓂᒃ ᑐᓴᒃᓴᐃᓐᓗ ᐃᓚ-ᐅᑎᑕᐅᕙᑦ ᖃᓄᐃᑦᑑᕐᒪᖔᑦ ᓯᑯᐃᑦ ᖃᓄᐃᓐᓂᕆᔭᐅᑦ ᐃᓕᖅᑯᓯᐅᑦ ᑲᖏ ᑲᖅᑭᐅᔪᒥ ᐊᐅᓪᐸᓪᓕᐊᒃᑲᑦᑕᕆᐊᖕᓴᖏᓐᓂᒃ ᐊᒻᒪᓗ ᓰᓇᒧᑦ ᐊᑐᕐᑕᐅᕆᐊᖕᓴᓂᒃ ᐅᓂᒃᑳᑦᑕᐅᔪᑦ ᐋᑖᓂ ᓅᑦ ᓇᓗᓇᐃᑦᑕᐅᓪᓗᓂ ᓄᓇᕗᑦᑎᐊᓄᑦ ᐃᓕᖅᑯᓯᖃᕐ-ᕕᐅᔪᑦ.

ᓯᑯᐃᑦ ᖃᓄᐃᓐᓂᕆᔭᐅᑦ ᐃᓕᖅᑯᓯᐅᑦ - 1:5,000,000
ᖃᐅᔨᓴᑦᑕᐅᔪᖅ
ᐃᒃᐱᒋᔭᖅᑲᓴᐃᓗᐊᓴᔭᑦᑐᑦ ᐃᓂᒋᔭᐅᑦ ᖁᓪᓛᓯᓵᕗᔪᑦ
ᐃᓕᑕᕆᐅᔾᔪᓯᓖᑦ ᐱᓪᒪᕆᐅᑎᑕᐅᔪᑦ
ᓯᑯᐃᑦ ᐃᓕᖅᑯᓯᕆᓚᐅᕐᑕᐅᑦ

- ᐅᑭᐅᒃᑯᑦ ᓯᑯᐃᑦ ᐊᔾᔨᒌᑦᑐᓂ ᐃᓂᒋᔭᐅᔪᓂ ᒫᑦᓯᒥᓗ ᓯᑯᐃᑦ ᓯᓂᐅᑦ
- ᓯᑯᑉ ᐃᐅᑦᓴᓂᖓ
- ᓯᑯᑉ ᐊᐅᓪᓕᓛᓕᐊᓂᖓ
- ᑐᓛᐃᔭᕐᓚᖕᓕᐊᑎᓪᓗᒍ
- ᐊᖓᓂᖅᑯᕐᓇᕐᑎᓪᓗᒍ
- ᓯᑯᔅᔭᐅᓇᖅᓭᕐᑎᓪᓗᒍ ᐅᑭᐊᖕᓵᒃᑯᑦ
- ᓯᑯᒥᒃ ᑎᑭᑕᐅᓯᒪᓇᕐᓂᐅᑉ ᐊᐅᓂᖓ
- ᖃᖓᑦᑕᕐᑎᑕᐅᓯᒪᔪᒃᑯᑦ ᐊᔾᔨᓕᐊᕗᓂᑯᐃᑦ, ᑎᓯᐱᕆ, 1975 ᐊᒃᑐᐸᕆ 1976-ᒧᑦ

ᑎᑭᓐᓂᐅᑉ ᐅᓕᑦᑕᕐᓂᐅᑉ ᐅᓕᑦᑕᕐᓂᓪᒪᕆᐊ ᐃᐅᕐᖃᓂᖅ

ᖃᖓ ᑕᖅᑭᐅᔪᒥ ᐊᐅᓪᓚᓕᐊᖅᑲᑦᑕᕆᐊᖕᓴᖕᓄᒃ - 1:3570,000
ᐱᖅᓯᕆᖄᓚᒃᐸᒃᑐᒥ ᐃᓂᒋᔭᐅᔪᒥ

ᓯᓚᔭᐅᑉᑐᒥ ᐃᒃᐱᒋᔭᐅᓴᕋᐃᑦᑐᑦ

- ᒪᐃ ᐊᑐᓇᐊᓕᓵᑎᓪᓗᒍ ᐋᓚᒃᒧᑦ
- ᐋᓚᔾ ᐊᑐᓇᐊᓕᓵᑎᓪᓗᒍ ᐊᒃᑐᐸᕆᒧᑦ
- ᐊᒃᑐᐸᕆᒥᑦ ᑎᓯᐱᕆᐸ ᓄᓇᕗᑦᑕ ᖃᓂᒋᔭᖓᓄᑦ
- ᔭᓄᐊᕆᒥᑦ ᒪᐃ ᐊᑐᓇᐊᓕᓵᑎᓪᓗᒍ

ᓰᓇᒧᑦ ᐊᑐᕐᑕᐅᕆᐊᖕᓂᒃ ᐅᓂᒃᑳᑦᑕᐅᔪᑦ ᓄᓇᕗᑦᑎᐊᑦ 1:375,000 ᑕᐅᑐᖓ ᐊᕙᓗᒥᐅᑕᐅᑉ ᐃᓕᖅᑯᓯᕆᔭᐅᖏᓪᓗ

- ᓯᓚᐅᑉ ᓴᓂᐊᓃᖕᓂᐅᔪᖅ ᐃᓕᖅᑯᓯᕆᔭᖓ
- ᓯᓚᒧᑦ ᐊᑐᐃᓐᓇᐅᕝᕕᐅᓂᖅ
- ᑐᓚᒃᑕᕝᕕᑦ ᐅᓗᕆᐊᓇᖅᑐᓪᓗ ᑐᓚᒃᕕᐅᓃᑦ
- ᒥᑦᑕᕝᕕᑦ
- ᐅᓂᒃᑳᑦᑕᐅᔪᑦ ᐋᖅᑭᐅᒪᔾᔪᑎᒋᔭᐅᓇᓱᒃᐸᒃᑐᑦ
- ᐅᓂᒃᑳᑦᑕᐅᔪᑦ ᐊᑐᑦᑕᐅᔪᓐᓇᑦᑐᑦ ᑭᓪᓕᖏᓪᓗ

ᓯᓚᒥ ᐃᒃᐱᒍᓱᒃᑲᐃᑦᑐᑦ

- ᓂᕐᔪᑎᑦ ᐆᒪᔪᐃᑦ ᐊᒃᐱᖏᑦᑐᑦ
- ᓂᕐᔪᑎᓕᕆᕝᕕᐅᕙᒃᑐᑦ ᐃᓂᖏᑦ
- ᓂᕐᔪᑎᓕᕆᕝᕕᐅᕙᒃᑐᑦ ᓄᓇᓖᑦ
- ᐃᑦᑕᕐᓂᑕᐅᓯᕝᕕᐅᔪᑦ ᐃᓂᖏᑦ
- ᐃᒃᐱᒋᔭᐅᓴᕋᐃᑦᑐᑦ ᐃᓂᖏᑦ
- ᑲᖏ ᐊᒃᐱᖏᑦᑐᑦ ᓂᕐᔪᑏᑦ ᐊᑐᑦᑕᐅᕙᓐᓂᖏᓪᓗ
- ᐊᕙᓗᒥᐅᑕᖓᑕ ᐅᓂᒃᑳᑦᑕᐅᓂᖓ

ᐃᒃᐱᒋᔭᐅᓴᕋᐃᑦᑐᑦ ᓇᓗᓇᐃᑦᑕᐅᓯᒪᓂᖏᑦ

ᐃᒃᐱᒋᔭᐅᓴᕋᐃᑦᑐᑦ ᓇᓗᓇᐃᑦᑕᐅᓯᒪᔪᑦ ᓄᓇᕗᑦᑎᐊᒥ ᐅᓂᒃᑲᓯᒪᕚᑦ ᐃᒃᐱ-ᒋᔭᐅᓴᕋᐃᑦᑐᓂᒃ ᓯᓚᒥ ᓯᓚᐅᑉᖏᓐᓂᐅᔪᒥᓗ ᑕᓗᕈᑎᐅᑉ ᐃᒪᖓᑕ ᓄᓇᓕᖏᓐᓂ ᐃᒃᐱᒋᔭᖅᑲᓴᔭᑦᑐᑦ ᐅᖅᓯᐊᓗᒃᑯᒃ ᐃᒪᑦᒧᑦ ᑯᕕᔾᔭᖄᓚᒃ-ᓂᑉᐸᑦ. ᐃᒃᐱᒋᔭᐅᓴᕋᐃᓐᓇᔭᑦᑐᑦ ᓇᓗᓇᐃᑦᑕᓇᓯᓚᐅᕚᑦ ᒪᓕᒃᑕᐅᓪᓗᑎᒃ ᖃᐅᔨᔭᐅᖃᓂᒃᓯᒪᔪᑦ ᐋᖅᑭᒃᓯᑕᐅᓂᑯᑦ ᖃᐅᔨᓴᑦᑕᓚᐅᕐᓗᑎᒃ ᐊᕙᓗᒥ-ᐅᑕᖓᓄᑦ ᓄᓇᕗᑦᑎᐊᕗᔪᖅ ᑐᒃᑑᔭᑦᑐᑉ ᐃᒪᖓᓂ ᐅᖅᓯᐊᓗᒃᑯᒃ ᑯᕕᔾᔭᖄ-ᔭᑉᐸᑦ ᑭᐅᔾᔪᑕᐅᓇᔭᑦᑐᒥᒃ ᓄᓇᕗᑦᑎᓕᐊᕗᓯᒪᔪᒥᒃ (5) ᓴᖅᑭᑕᐅᓯᒪᕚᖅ ᐊᑐᑦᑕᐅᓇᔭᑦᑐᖅ ᖃᐅᔨᓴᐃᔾᔪᑕᐅᔪᓄᑦ ᑲᔪᓯᐅᒪᐃᓐᓇᕈᑕᐅᑎᑦᐊᑦᑐᓂ ᐃᒃᐱᒍᓱᒃᓴᐃᓐᓂᐅᔪᒥᒃ ᐋᖅᑭᐅᒪᑎᑦᑎᓇᓱᒃᓗᑎᒃ ᐅᖅᓯᐊᓗᒃᑯᒃ ᑯᕕᔾ-ᖄᓚᒃᓂᑉᐸᑦ ᓴᓗᒪᖕᓴᐃᒥᐊᖅᑲᓕᑉᐸᑕᓗ.

ᐋᖅᑭᐊᑦᑕᐅᓪᓗᓂ ᖃᐅᔨᓴᐃᔾᔪᑕᐅᔪᖅ ᓇᓗᓇᐃᔭᒪᑎᑦᑎᔪᖅ ᓄᓇᓕᖕᓂ ᓂᕐᔪᑎᓄᑦ ᑭᑐᑐᐃᓐᓇᐃᓪᓗ ᐊᕙᓗᖏᓐᓄᑦ ᐊᒃᑭᕆᖏᓐᓂᐅᔪᓂᒃ ᐃᒃᐱᖕᓯᐅᓯᓂᒃ. ᐆᒃᑐᑎᒥᒍᑦ, ᓅᑖᖑᔪᖅ ᓴᖅᑭᑎᑕᐅᓚᐅᕐᑐᖅ ᐃᓕᖅᑯᓯᖅᓯᐅᔪᓄᑦ ᓇᓗᓇᐃᔭᒪᑎᑦᑎᔾᔪᑎᖅ ᑐᑭᓯᓇᑎᐊᕐᓂᖏᓐᓂᒃ ᓯᕗᓪᓕᐅᑎᑕᐅᒥᐊᖃᑖᖑᔪᓂᒃ ᓴᐳᓂᐊᕐᑕᐅᒥᐊᖅᑐᓂᒃ.

ᐃᒃᐱᒍᓱᖕᓯᐃᓐᓇᕐᑐᑦ ᓇᓗᓇᐃᔭᐅᔪᔪᖅ ᐋᖅᑭᒃᑕᐅᔪᑦ ᑖᒃᑯᓇᑎᐅᑉ ᐃᒪᖕᓂ ᐊᑐᑦᑕᐅᔪᖕᓱᐅᓪᓗᑎᒃ ᐃᓚᐅᑎᑦᑎᔾᔫᑦ ᓂᕐᔪᑎᑦ ᑕᐅᑐᖕᓇᕐᓂᒃ ᐆᒪᔪᐃᑦ ᑕᐅᑐᖕᓇᕐᓂᒃ ᐊᒻᒪ ᑭᑐᑐᐃᓐᓇᖅᓄᑦ ᐊᒃᑐᑦᑕᐅᕙᓐᓂᖕᓇᕐᓂᒃ ᑕᒪᒃᑯᐊ ᐱᓱᒪᐅᑎᑕᐅᔪᑦ ᐅᖅᓯᐊᓗᒃ ᑯᐱᔪᖅᑎᓪᓗᒍ ᑭᐅᔭᐅᓇᓯᒃᑲᐅᑦᑎᐅᔭᐅᑦ ᐋᖅᑭᐅᒪᔭᐅᓇᓱᒡᓗᑎᒃ ᑕᒪᐃᓐᓂᒃ ᐱᓱᒪᐅᑎᑕᐅᑦᑎᐊᕐᒥᐅᑦ. ᐱᖑᕐᓕᖑᕐᒥᐅᑦ ᐃᓛᒃᑯᖑᔪᑦ ᐱᓱᒪᐅᑎᑕᐆᕐᑲᑕᐅᓇᔭᕐᑐᑦ: ᑭᑐᑐᐃᓐᓇᐃᑦ ᐃᓄᐃᑦ ᐊᑐᖅᐸᒃᑕᕐᑦ, ᓂᕐᔪᑏᑦ ᐆᒪᔪᓗ ᓄᓇᒥᐅᑕᐅᖃᐃᑦ, ᓯᐅᕆᒧ ᖃᓂᒋᔭᒃᑐᑦ ᐅᕙᖑᓐᓂᑦ ᐅᖅᓯᐊᓗᓕᓐᓃᕈᔪᒥ ᐃᒪᒃᑯᑦ ᖃᓂᒋᔭᖑᓂ ᓄᓇᖃᐅᑐᑦ.

ᑭᑐᑐᐃᓐᓇᐃᑦ ᐃᓄᐃᑦ ᐊᑐᖅᐸᒃᑕᕐᑦ ᓇᓗᓇᐃᔭᕐᑕᓗᐅᑉᐳᑦ ᑲᑎᒪᓗᐅᖅᑎᓪᓗᒥᓪᓗ ᑎᓴᒪᓐᓇ 1989-ᒥ ᐋᖅᑭᐊᑦᑕᐅᓪᓗᑎᒃ ᒥᑦᑎᒪᑕᓕᒥ ᑲᑎᒪᑎᓪᓗᒥᑦ ᑭᖑᑐᐃᕈᑦ ᑕᒪᐃᓐᓂᑦ ᓄᓇᓕᖕᓂᑦ ᖃᐅᔨᓴᑦᑕᐅᕝᕕᐅᓂᐊᕐᑐᓂᖏᑦ ᐃᓚᐅᔭᐃᓐᓇᐅᓚᐅᕐᑐᑦ. ᐊᑐᓕᖅᓱᐅᔭᒥ ᐃᓚᐅᔭᖅ ᒪᓐᓇᐅᓚᐅᕐᑐᖅ ᑲᑎᒪᔭᓂᑦ ᐊᑐᓕᖅᓱᐅᔭᖅ ᐋᑦᑐᕋᑎ ᐃᓪᓚᑦ (Admiralty Inlet) ᐃᓚᐅᑎᑕᐅᖅᓱᐅᓪᓗᓂ ᓄᓇᖓᐊᒥ ᓄᓇᒥᐅᑲᑕᐅᓂᖓᓄᑦ ᐃᒃᐱᐊᔪᒥᐅᑦ ᔫᓕᐃᑦ ᐃᓪᓚᑦ (Berlin-guet Inlet) ᖃᓂᒋᔭᖓᓂᒃ ᓄᓇᐅᔭᒥᓗ ᒥᑎᐅᑦᕕᒃᑲᑦᑕᓚᑕ ᑎᖁᐊᔨᐅᑦᕕᒃᑲᑦᑕᓚᑕ. ᑕᒪᓐᓇ ᐃᓚᐅᑎᑕᐅᓇᓯᓚᐅᑦᑐᒐᓗᐊᖅ; ᑭᓯᐊᓂ, ᖃᓇᑕᖑᐊᒃᑯᑦ ᓄᓇᖑᐊᑦ ᐱᔭᐅᓯᒪᔪᓐᓇᓚᐅᖏᒪᑕ ᐊᒥᓱᖑᑎᑦᑕᐅᓂᐊᓪᓗᑎᒃ ᑎᑎᖅᑎᒍᑦ ᓴᖅᑭᑕᐅᓗᑎᒃ.

ᓂᕐᔪᑏᑦ ᐅᓄᕐᓂᖏᑦ ᐋᖅᑭᐊᑦᑕᐅᓚᐅᕐᑐᑦ (ᑐᒃᑐᔪᑦ ᐃᒪᖓᑕ ᓄᓇᖑᐊᑉ ᓴᓂᐊᓃᑎᑕᐅᓪᓗᑎᒃ) ᐱᖑᕈᑦ ᓂᕐᔪᑏᑦ ᐊᒥᓲᓂᖅᓴᐅᓂᕋᕐᑕᐅᓪᓗᑎᒃ.

ᓯᖅᓴᖃᕐᓂᐅᔪᖅ ᓇᔪᕐᑕᐅᕙᒃᑐᖅ ᐅᓂᒃᑲᑕᐅᓯᒪᓂᖓ ᐋᖅᑭᐊᑦᑕᐅᓚᐅᓇᖅ ᐊᕕᒃᑐᖅᓯᒪᓂᐅᔭᒥ ᖃᐅᔨᒪᔭᐅᑎᐊᕐᓂᖅᓴᐅᔭᒪᐅᓗᓂ ᒪᓖᑦ ᐊᖏᓂᖏᑦ. ᒪᓖᑦ 18 ᓂᒃ ᐱᓇᓱᐊᕈᓯᕐᓂᒃ ᑕᒫᓃᕈᑦ ᑖᓗᕆᑎᐅᑉ ᐃᒪᖓᓂ ᐱᓇᓱᐊᕈᓯᕐᓄᑦ ᐊᒥᓱᓄᑦ ᑎᑭᓯᒪᔪᓐᓇᕐᓗᑎᒃ ᐳᓇᕐᐳᐊᑦ ᐃᓚᒋ ᕙᖃᐅᑎ ᒥᐅᕖᐅ ᓴᐅᓂᒥ.

ᖃᐅᔨᓴᖅᑕᐅᔪᖅ ᐊᕕᒃᑕᐅᖃᑦᑕᓗᐅᕐᖅ ᐃᒃᐱᒋᔭᐅᔾᔨᓇᔭᕐᑐᑦ ᓇᓗᓇ-ᐃᑦᑕᐅᓪᓗᑎᒃ ᐱᓇᓱᐊᕐᕕᐅᓕᓐᓂᐊᕐᑎᓗᑎᒃ ᐃᒃᐱᒋᔭᐅᔾᔨᓇᔭᕐᑐᑦ ᓴᖅ-ᑕᐅᕙᓪᓕᓂᐊᕐᓂᐊᓂᒥᑦ ᖃᐅᔨᓴᖅᑐᒃᓯᒪᓗᓂ ᐃᒃᐱᒋᔭᐅᔾᔨᓇᔭᕐᑐᑦ ᓇᓗᓇ-ᐃᑦᑕᐅᓯᒪᓪᓚᕆᓐᓂᐊᕐᓂᖏᑦ. ᐃᒃᐱᒋᔭᖅᑲᖅᓴᐃᓐᓇᔭᕐᑐᑦ ᓯᕗᓂᔭᒥᒃ 108-ᖑᔪᑦ ᑲᑦᔪᐅᑎᑕᐅᖃᑦ ᐃᓂᒋᔭᐅᑎᑕᐅᔪᑦ ᓄᓇᖑᐊᒥ. ᑕᒪᐃᓐᓂᒃ ᓯᖅᓴᐅᑉ ᓯᓈᓂᑦ ᐱᒋᐊᕐᓗᑎᒃ ᖃᓂᒋᔭᖓᓂ 1 ᑭᓚᒥᑕ ᓯᖅᓴᐅᖑᑦᑐᒧᑦ ᑎᑭᓪᓗᑎᒃ ᐊᒻᒪ ᑎᑭᓯᒪᓪᓗᑎᒃ ᑎᓂᑦᑕᕐᓂᐅᑉ ᐃᓯᐊᓄᑦ. ᓯᖅᓴᐅᑉ ᓯᓂᖓᓂ ᐃᒃᐱᒋᔭᖅᑲᖅᓴᐃᓐᓇᔭᕐᑐᑦ ᐃᒃᐱᒍᓱᖕᓯᐃᓐᓇᔭᕐᑐᑦ ᒪᐃᒥᑦ ᐊᒃᑐᐳᓇᒧᑦ, ᐅᖅᓱᐊᓗᒃ ᓯᖅᓴᒧᑦ ᑎᑭᑦᑐᓂ ᑰᕕᔭᓇᕐᑎᓪᓗᒍ ᐅᕙᖑᓐᓂᑦ ᓯᖅᓴᐅᑉ ᓯᓈᓄᐊᕿᓇᕐᑎᓪᓗᒍ.

ᐃᒃᐱᒋᔭᐅᔾᔨᓇᔭᕐᑐᑦ ᓇᓗᓇᐃᔭᕐᑕᐅᔪᑦ ᓯᖅᓴᐅᖑᑦᑐᒥ ᓇᓗᓇᐃᔭᕐᑕᐅᓯᒪᔪᑦ ᓄᓇᖑᐊᑎᑦᑎᒍᑦ ᓯᓚᐅᑉ ᐃᓕᖅᑯᓯᖓ ᒪᓕᒃᑐᒍ; ᒪᐃ ᐱᕆᐊᓕᕕᓵᖅᑎᓪᓗᒍ ᐋᓚᒃᑯᑦ, ᐋᓚᓯᒥᑦ ᐱᕆᐊᓕᓵᖅᑎᓪᓗᒍ, ᐊᒃᑐᐳᓇᒧᑦ ᐊᑐᓇᐊᓕᓵᖅᓂᖓᓄᑦ, ᐊᒃᑐᐳᓇ ᐊᑐᓇᐊᓕᓵᖅᑎᓪᓗᒍ ᑎᓴᒪᓐᓇ ᓄᓇᖑᐊᑕ ᖃᓂᒋᔭᖓᓄᑦ, ᐊᒻᒪ ᔭᓄᐊᕆᒥᑦ ᒪᐃ ᖃᓂᒋᔭᖓᓄᑦ. ᓯᖅᓴᐅᖑᑦᑐᒥ ᐃᒃᐱᒋᔭᐅᓴᖅᑐᖅ ᐅᑭᐅᒃᑯᑦ, ᐊᒃᑐᐳᓇᒥᑦ ᒪᐃᒧᑦ, ᐃᓛᒃᑯᖑᑎᑕᐅᓚᐅᕐᑐᖅ ᓇᓗᓇᐃᔭᕐᑕᐅᓂᖓ ᓯᖅᓯᒥᑦ ᐱᓕᕆᐊᖑᔪᕐᑐᓂᑦ ᐃᓛᒃᑯᖑᔭᓗᓂ. ᓯᖅᓴᐅᖑᑦᑐᒥᑦ ᐃᒃᐱᒋᔭᐅᔾᔨᓇᓂᐅᔪᖅ ᓯᑯᐃᔭᕐᓂᖅᑐᒍ ᑕᕝᕙᐅᖅ ᒪᐃᒥᑦ ᐊᒃᑐᐳᓇᒧᑦ, ᓇᓗᓇᐃᔭᕐᑕᐅᓗᓂ ᓯᖅᓴᒥ ᐃᒃᐱᒋᔭᖅᑲᖅᓴᐃᑦᑐᑦ ᑖᕙᐅᓂᖓᓂᒃ. ᑭᒡᓕᒥᓴᐅᔭᑦ ᓯᖅᓴᐅᖑᑦᑐᒥ ᐃᒃᐱᒋᔭᖅᑲᖅᓴᐃᑦᑐᓇᑐᓄᑦ ᒪᓕᒃᑎᑕᐅᖃᑦ ᐅᐱᓐᖑᒃᑯᑦ ᐅᑭᐊᒃᓴᒃᑯᑦ ᐊᐅᔭᒃᑯᑦ ᐅᑭᐅᒃᑯᓗ ᑭᒡᓕᒥᓴᐅᑎᑕᐅᓂᒃ ᓯᑯᖅᑎᓪᓗᒍ ᓇᓗᓇᐃᒃᑲᓐᓴᐅᓯᓂ ᐊᒻᒪ ᐃᒪᐅᓗᑦᑎᓪᓗᒍ. ᑯᕕᔭᖅᓯᕐᑦ ᐅᖅᓱᐊᓗᖑᒥᒃ, ᓯᖅᓴᐅᖑᑦᑐᒥ ᐃᒃᐱᒋᔭᖅᓴᔪᑦ ᐊᑉᐱᕆᔪᖕᓃᑦ[illegible] ᓄᓇᖑᐊᒥ ᐃᒃᐱᒋᔭᐅᓂᐊᕐᓯᒋᔭᐅᔪᑦ ᓯᑯᐃᑦ ᐃᓕᖅᑯᓯᖑᑦ ᒪᓕᒃᑐᒥᑦ ᐱᓗᐊᕿᔪᖅᑲᕐᓂᕐᑎᓪᓗᒍ.

ᑕᒪᐃᓐᓂᒃ ᓯᖅᓴᐅᑉ ᓯᓂᖑᑦ ᐊᒻᒪ ᓯᖅᓴᐅᖑᑦᑐᒥ ᐃᓂᐅᔪᑦᒧ ᑭᖑᑦᑐᑦᑕᑎᑕᐅᖃᑦ ᐊᑕᐅᓯᕐᒥᒃ ᓈᓴᐅᑎᖃᑦᑎᑕᐅᓚᐅᕐᑐᑦ ᓇᓗᓇᐃᔭᕐᑕᐅᓂᑯᐃᑦ ᑕᒪᐃᓐᓂᒃ ᐊᕙᓗᒥᐅᑕᓄᑦ ᐱᓪᓚᑦᑎᑕᐅᔪᑦ ᑭᑐᑐᐃᓐᓇᖅᓄᑦᓗ ᐱᓪᓚᑦᑎᑕᐅᔪᑦ ᒪᓕᒃᑕᐅᓪᓗᑎᒃ ᓄᓇᒥᐅᔭᒥ. ᑖᓐᓇ ᓈᓴᐅᑎᒥᐅᑎᑕᐅᔪᖅ ᐃᒪᓐᓇᐃᓯᒍᔪᖅ, ᓯᖅᓯᖅᐸᓪᓕᓐᓇᐅᓇᐅᑐᖅ, ᖁᑎᖏᒍᓇᐅᑐᖅ, ᐃᒃᐱᒋᔭᐅᓗᐊᖅᓴᖑᑐᖅ, ᐃᒃᐱᒋᔭᐅᑎᐊᖑᓪᓚᓐᓇᑲᐅᑐᖅ, ᑖᒃᑯᐊ ᑕᐃᒪᓐᓇ ᓈᓴᐅᑏᑦ ᑐᑭᖅᑎᑕᐅᔪᑦ ᐃᒃᐱᒋᔭᐅᔾᔨᓇᑐᓇᑐᓂ ᓄᓇᖑᐊᓂ ᑎᑎᖅᑕᐅᓯᒪᔪᑦ.

ᐃᒃᐱᒋᔭᐅᔾᔨᓇᔪᓂ ᓇᓗᓇᐃᔭᕐᑕᐅᓯᒪᔪᓂ ᑭᖑᓪᓕᖅᐸᖑᔪᑦ ᐊᑐᐃᓐᓇᐅᔭᑎᑦᑎᔾᔪᑕᐅᔪᒪᔪᑦ ᓄᓇᒥᐅᑕᓇᒃᑐᒥ ᑲᑦᔪᐅᔪᓂᒃ ᐊᐅᓚᑦᑎᔾᔪᑎᖏᓐᓂᒃ ᑭᐅᔾᔪᓂᓗ ᑭᐅᓇᔭᑐᓂᒃ ᐅᖅᓱᐊᓗᒃ ᑯᕕᔭᖅᓂᑦᑎᓪᓗᒍ ᑕᒪᓐᓇ

ᐃᓕᖅᑯᓯᕆᔭᐅᓇᓱᒃᑐᖅ ᖃᐅᔨᒃᓴᖅᑕᐅᓇᓱᒡᓗᓂ ᓴᐳᓐᓂᐊᕐᑕᐅᒥᐊᖃᑐᓂᒃ ᓴᓗᒪᕐᑕᐅᒥᐊᖃᑐᓂᒡᓗ ᑯᐱᐊᖅᓯᓂᖅᐸᑦ ᐊᔪᐃᓗᓂᐊᕐᑎᓪᓗᒍ ᑯᐱᐊᕕᐅᔪᒥ ᐃᓚᐃᓯᒪᔪᖃᕐᓯᒪᑐᖅ. ᑖᒃᑯᐊ ᓇᓗᓇᐃᕐᑕᐅᔪᑦ ᐃᑲᔪᕐᓂᖃᕐᓂᐊᕆᐳᑦ ᐃᓯᒪᓕᐅᕆᐊᖃᑐᓄᑦ ᑭᐅᒥᐊᕐᓂᐊᑐᓄᑦ ᑯᐱᐊᖃᕐᓂᕐᑎᓪᓗᒍ ᐊᒻᒪ ᐃᓕᓐᓂᐊᕐᑎᕐᑎᔪᑕᐅᓂᐊᑐᓄᑦ ᐃᑲᔫᑎᖃᕈᓐᓇᓂᕐᓗᓂ.

ᐱᓕᕆᐊᕐᕕᒪᕆᓕᕐᑎᓪᓗᒍ ᐅᕝᕙᓗᓐᓂᑦ ᐱᓕᕆᐊᕐᓂᐊᑐᑦ ᐸᕐᓇᒍᑕᐅᕙᓕᐊᑎᓪᓗᒋᑦ ᐃᓅᓯᒃᑲᓐᓂᐊᒃᑲᐳᑦ ᓯᒻᒪᐅᑉ ᓯᓂᒋᓐᓂᒃ ᐃᓅᒍᓯᖅᓴᐃᑐᓂᒃ ᐊᒻᒪ ᓯᒻᒪᐅᒋᑐᓄᑦ ᐊᕙᓗᒥᐅᑕᒋᓐᓂᒃ ᐱᖑᕐᓕᖑᓗᒋᑦ ᐃᓯᒪᒥᔭᐅᕐᑎᐊᕋᐅᕐᒥᐊᖃᕐᐳᑦ.

ᓯᕗᓕᐅᕝᖅ: ᓇᓗᓇᐃᔭᐃᑐᐃᓐᓇᕐᓂᖅ (ᐆᑦᑑᑎᒥᓗᒥᑦ ᓯᓗᐊᕈᑕᐅᓇᔭᕆᑐᖅ) ᐊᑐᐃᓐᓇᐅᑎᕐᑎᑲᐅᑎᒥᓇᔭᕐᐳᖅ ᐃᑉᐱᒋᔭᐅᓴᕐᓴᐃᓐᓇᔭᕐᑐᒥᒃ ᖃᐅᔨᒃᑕᐅᓗᓂ.

ᑐᓕᐊ: ᓇᓗᓇᐃᕐᑕᐅᓇᔭᕐᑐᑦ ᐃᑉᐱᒋᔭᐅᓴᕐᓴᐃᓐᓇᔭᕐᑐᑦ ᐊᑐᐃᓐᓇᐅᑎᕐᑎᕐᑎᕐᑕᐅᓂᐊᕐᐳᑦ ᐸᕐᓇᒃᑎᓄᑦ, ᓄᓇᖃᕐᑐᑦᑐᖃᕐᓄᑦ ᓴᓗᒪᖅᐃᕐᓄᓪᓗ ᐱᓪᓚᐅᕆᓂᒃ ᓇᓕᐊᒃ ᐱᓪᓚᐅᒥᐊᖅᓯᕆᓂᒃ ᖃᐅᔨᕐᑕᐅᓗᑎᒃ (ᐆᑦᑑᑎᒥᓗᒋᑦ ᓇᓕᐊᑦ ᓇᓗᔭᐅᕆᓪᓗᑎᒃ ᐊᕙᓇᓯᖅᑕᐅᓙᖃᑕᕆᓚᖏᑦ, ᐅᓄᕐᓂᓇᔭᕆᑦ ᓂᕚᑎᑦ ᐊᑉᐲᕆᑐᑦ ᒫᓐᓇ ᐊᑐᐃᓐᓇᐅᔪᑦ). ᑖᓐᓇ ᑐᓴᕋᖅ ᑐᓴᕐᑕᐅᓯᒪᒥᐊᖃᕐᐳᖅ ᖃᐅᔨᒪᓂᐊᕆᑕ ᖃᓄᐃᑐᓂᒃ ᓴᓗᒪᖅᐃᔪᑎᖃᕐᓇᐊᖃᕆᕗᒥᒃ ᓄᓇᓖᑦᓗ ᐃᑉᐱᓂᐊᕐᑕᕆᑦ ᐊᕆᓗᐊᖃᕆᓪᓗᒥᑦ. ᓄᓇᓕᓐᓂ ᐊᑉᐲᕆᑐᓂ ᐃᑉᐱᒋᔭᖃᓴᐃᓐᓇᔭᕐᑐᑦ ᐅᖃᐅᓯᐅᔪᑦ ᐅᓂᒃᑲᕐᑕᐅᕐᑎᐊᕐᒪᔪᑦ ᓇᓗᓇᐃᒃᑯᑕᖅᑐᓂ A–Γ.

ᐱᖁᔭᐊᑦ: ᐱᓕᕆᐊᕐᒐᐅᑐᑦ ᑲᖅ ᐱᓕᕆᐊᕐᒐᖅᒪᖓᑦ, ᐅᕝᕙᓗᓐᓂᑦ ᑲᖅ ᓂᕚᑎᑦ ᐊᑉᐲᕆᑐᑦ ᑲᖅ ᐊᑉᐸᖅᒪᖓᑦ ᐃᓄᒥᔭᐅᔪᒥᒃ, ᓇᓗᓇᐃᕐᑕᐅᒃᐸᑦ ᖃᐅᔨᕐᑕᐅᓂᐊᕐᐳᑦ ᐃᑉᐱᒍᓯᖕᓴᐃᑦᑐᑦ ᓇᓕᐊᑦ ᓯᕗᓕᐅᑎᑕᐅᓂᐊᕐᒪᖔᑦ (ᑕᒪᐃᓐᓂ ᐃᓚᐃᓐᓇᕆᓪᓗᓐᓂᑦ) ᐅᖅᓯᐊᓗᕆᑦ ᐃᑉᐱᒋᔭᖃᕐᓂᐊᕆᐊᖅᕆᓐᓂᒃ ᖃᐅᔨᓴᕐᑕᐅᓗᑎᒃ, ᐆᑦᑑᑎᒥᓗᒍ ᑕᕆᐅᕐᒥ ᑎᕆᐊᕐᒐᓕᕐᑐᑦ ᐱᓪᓚᐅᑎᑕᐅᒃᐸᑦ ᐃᓅᒥᕐᒐᕐᑕᕆᑦ ᐃᑉᐱᒋᔭᖃᕈᖅ ᓇᕐᓂᕆᑦ ᐃᓯᒪᒥᓗᒥᑦ, ᑭᓯᐊᓂ ᖁᕕᐊᕐᓂᕐᑎᓪᓗᒍ ᑕᕆᐅᕐᒥ ᑎᕆᐊᕐᒐᓕᕐᑦ ᑕᕐᕋᐅᕆᑎᓪᓗᒥᑦ (ᖃᐅᔨᒪᔭᐅᓪᓗᑎᒃ ᑲᖅ ᑕᕐᕋᐅᕆᒥᐊᖅᕆᓐᓂᒃ ᑕᕐᕋᐅᑕᕆᓐᑕᓇᐊᖅᕆᓐᓂᒃ), ᐃᑉᐱᒋᔭᖃᓴᕐᓂᕆᑦ (ᓯᕗᓕᐅᑎᑕᐅᒃᑕᐅᓇᔭᕐᓂᕆᑦ) ᐃᓅᒥᕐᒐᕐᑕᕆᑦ ᓴᓗᒪᖅᑕᐅᓗᐅᑐᓇᐊᖅᑐᓂ, ᒥᑭᓛᖅᑕᐅᓇᔭᕐᐳᑦ ᑐᐊᕕᐅᑕᐅᓗᐊᑐᓂ ᐃᓚᐅᑎᑕᐅᓇᔭᕆᓪᓚᑦ.

ᑕᒪᒃᑯᐊ ᐃᓯᒪᓕᐅᕈᑕᐅᓇᔭᕐᓂᕆᑦ ᐱᓕᕆᐊᕐᒐᔭᕐᐳᑦ ᐃᓯᒪᒃᓯᕆᐅᕈᑕᐅᓗᑎᒃ ᑭᓯᐊᓂ ᐃᓛᒃᑯᑦ ᐃᑉᐱᒋᔭᖃᓴᐃᓐᓇᔭᕐᑐᑦ ᐊᒻᒪ ᒫᓐᓇᐅᔪᖅ ᐊᑐᐃᓐᓇᐅᔪᑦ

ᐃᓯᒪᒥᔭᐅᓇᔭᕐᐳᑦ ᖃᐅᔨᒃᓴᕐᓂᕐᑎᓪᓗᒍ ᐃᓕᖅᑯᓯᓇᔭᕐᑕᕆᑦ ᑕᐅᕙᐅᑉᐸᑦ ᖃᐅᔨᒃᓴᕐᓂᕐᑎᓪᓗᒍ ᐃᓯᒫᓗᑎᒥᔭᐅᔪᑦ ᓯᕗᓕᐅᑎᑕᐅᓇᔭᕐᓂᕆᑦ ᑕᐅᕙᐅᔪᑦ ᓇᓗᓇᐃᖅᓃᕐᓴᔭᕐᐳᑦ ᓇᓕᐊᑦ ᓯᕗᓕᐅᑎᑕᐅᓕᕐᓇᕐᓂᐊᕆᓪᓚᖏᑦ.

ᐱᓕᕆᐊᕐᓇᔭᕐᑐᑦ ᖃᓄᐃᓕᖓᓪᓚᖏᑦ

ᐅᖅᓯᐊᓗᒋᑦ ᑯᐱᐊᖃᕐᓂᕐᑎᓪᓗᒍ ᐃᓯᒪᖅᓴᐅᕈᑕᐅᓇᔭᕐᑐᑦ ᐱᓕᕆᐊᕐᓂᐊᕐᑐᓄᑦ ᐃᓕᖅᑯᓯᕆᔭᐅᓂᐊᕐᑐᑦ 34–ᖑᔪᓄᑦ ᓄᓇᖑᐊᓂ ᐅᓂᒃᑲᕐᑕᐅᔪᑦ ᓇᓗᓇᐃᕐᑕᐅᓯᒪᓪᓗᑎᒃ. ᑖᓐᓇ ᓄᓇᖑᐊᖑᔪᖅ ᓇᓗᓇᐃᕐᑕᐅᓯᒪᕐᑎᐊᑐᓂᒃ ᓈᓯᒪᔪᓂᒃ ᐊᑐᐃᓐᓇᐅᑎᕐᑎᕐᑕᐅᓚᓯᒋᓚᖅ ᓄᓇᒧᑦ ᐃᓕᖅᑯᓯᕆᔭᐅᓇᔭᕐᑐᓂᒃ ᐅᕐᓯᐊᓗᒋᓪᓗ ᖃᐅᔨᒃᓴᔭᕐᓂᐊᑦ ᓈᓐᓇᔭᕆᐊᖅᖑᓂᒃ ᐅᒃᐅᓯᒃᑯᓚᖅ ᑖᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ ᖃᐅᔨᒃᓴᔭᕐᓂᐊᑦ. ᐅᓂᒃᑲᕐᑕᐅᒃᑕᓚᐅᑐᑦ ᓯᕗᓕᐅᔪᑦ (ᐆᑦᑑᑎᒥᓗ 9) ᐅᓂᒃᑲᒃᑲᐳᑦ ᐊᕆᔪᒥᒃ ᓯᓴᒧᑦ ᖃᐅᔨᒃᓴᔭᕐᓂᐊᑦ ᑖᓗᕈᑎᐅᑉ ᐃᒪᖓᑦ ᓄᓇᖓᓂ, ᐃᓕᖅᑯᓯᕆᔭᐅᓇᔭᕐᑐᓕ ᐊᑉᐲᕆᔭᐅᕆᓪᓚᓇᕙᔭᕐᓚᑦ ᖃᐅᔨᒃᓴᕐᓂᐊᑦ ᐊᕆᓗᐊᕆᓐᓂᕐᐅᓇᔭᕐᓚᑦ ᐅᒥᐊᕐᔪᐊᖅ ᓄᓇᒦᑎᓪᓗᒍ ᐅᕝᕙᓗᓐᓂᑦ ᓯᑯᒥᑦ ᓯᖃᕐᑕᐅᑎᓪᓗᒍ ᑯᐱᓂᐅᓇᔭᕐᑐᖅ. ᖃᓄᑐᐃᓐᓇᖅ ᓯᓇᑐᐃᓐᓇᕐᓂᒃ ᖃᐅᔨᓴᕐᑎᑦ ᖃᐅᔨᓴᕐᑕᕕᓂᕆᑦ ᐊᑯᓂᐅᔪᖅ ᐃᑉᐱᒋᔭᐅᓇᔭᕐᑐᑦ ᐅᖅᓯᐊᓗᒋᑦ ᑯᐱᐊᖃᕐᓂᕐᑎᓪᓗᒍ ᕿᑭᖅᑖᓗᒥ ᓯᒡᔭᒥ ᐅᓂᒃᑲᕐᑕᐅᔪᑦ ᐱᑕᖃᐅᕐᐳᑦ ᕿᑭᖅᑖᓗᒥ ᖃᐅᔨᒃᓴᔭᕐᓂᐊᑦ ᐱᓕᕆᐊᕐᓇᔭᕐᑐᖅ ᐅᓂᒃᑲᕐᑕᐅᓂᖓᓂ (ᐅᑭᐅᕐᑕᕐᑐᒥ, 1987, ᓈᓴᐅᑎᖓ 40, ᐃᓚᒋᐊᕐᑕᐅᔪᖅ 1). ᐱᓕᕆᐊᕐᓇᔭᕐᑐᑦ ᐅᖅᓯᐊᓗᓕᕆᓂᕐᒧᑦ ᐅᑭᐅᕐᑕᕐᑐᒥ ᓯᑯᐃᑦ ᐊᑉᐲᕆᑐᑦ ᑯᐱᐊᕕᐅᑎᓪᓗᒥᑦ ᓇᓗᓇᐃᕐᑕᐅᔪᑦ ᑲᑎᒪᔪᕐᑕᐅᒃᑕᕐᓂᑯᐃᑦ ᐅᑭᐅᓂᒃ 12–ᓂᒃ ᑲᑎᒪᔪᑎᕕᓄᑦ ᒪᓕᒃᑕᐅᓪᓗᑎᒃ ᐊᕙᓗᒥᐅᑕᓕᕆᓂᕐᒃᑯᓄᑦ ᑲᓇᑕᒥ ᐅᑭᐅᕐᑕᕐᑐᒥ ᐃᒪᕐᒧᑦ ᐅᖅᓯᐊᓗᒋᑦ ᖃᐅᔨᒃᓴᕐᓂᐊᑦ ᐱᓕᕆᐊᖃᕐᑎᐅᓇᔭᕐᑐᑦ ᐅᓂᒃᑲᕐᑕᕆᑦ ᐊᑐᐃᓐᓇᐅᔪᒃᑲᐳᑦ ᓯᑯᒥ ᓴᓗᒪᖅᑕᐅᒃᑕᕐᓴᔭᕐᑐᓂᒃ.

ᐱᓕᕆᐊᕕᐅᔪᐊᑦ ᐃᒪᒥᐅᑕᓂᒡᓗ ᐱᓕᕆᐊᒃᑲᓂᐅᔪᑦ ᑕᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ ᐊᒥᕐᓯᕆᑎᓗᒥᑦ ᑯᐱᐊᓇᕐᑐᑦ ᐊᒥᕐᓯᕆᔪᑎᒥᕙᖅ, ᒫᓐᓇᐅᔪᖅ ᓯᕗᓂᐸᑎᓐᓂᓗ. ᑕᒪᒃᑯᐊ ᑯᐱᐊᓇᕐᓂᐅᕙᑦ ᐅᖅᓯᐊᓗᒋᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐊᔭᕐᑐᐃᓂᖅ ᓄᓇᓕᖕᓄᑦ ᐊᑐᕐᑕᐅᒥᐊᖃᕐᑐᓂᒃ ᐅᖅᓯᐊᓗᖅᓂᒃ ᐊᔭᕐᑐᐃᑎᓗᒥᑦ, ᒪᕿᒃ ᐅᔭᕐᖓᓂᐊᕐᕕᐅᔪᖅ, ᐊᒻᒪ ᐅᓇᑕᕐᑐᖅ ᐊᑐᕐᑕᖅᔪᑦ ᐅᖅᓯᐊᓗᒋᑦ ᐃᓕᓯᕚᐅᕆᓕᐊᓂᕆᑦ, ᐊᒻᒪ ᐅᑭᐅᒥ ᒪᕿᐃᕐᓗᑎᒃ ᐱᖁᓯᐃᕐᓗᑎᓗᒃᑲᓂᕐ ᐅᖅᓯᐊᓗᖅᑯᒥ ᐅᓯᔪᓂᒃ ᐅᒥᐊᕐᔪᐊᓂᒃ ᑎᑭᑕᐅᕙᒃᑐᑦ. ᑕᒪᐃᓐᓂ ᐅᖅᓯᐊᓗᒃ ᑯᕕᓇᔭᕐᓂᖅ ᐅᓗᓐᓂᐊᓇᕐᓂᖃᕈᓐᓇᖁᑎᓪᓗᓂ ᑭᓯᐊᓂ ᑕᓐᓇᐅᖅ ᐃᒪᖑᔪᒪᑎᓪᓗᒍ ᐊᐅᔭᒃᑯᑦ.

ᐊᓯᐊᒥᒃ ᐅᖅᓱᐊᓗᒋᒃ ᑯᐱᐊᖃᕐᕋᓂᕐᓂᑦ ᑭᐅᔪᓐᓇᕋᔭᕐᑐᑦ ᐊᒥᒐᕐᒥᓐᓇᐅᓇᔭᕐᑐᑦ. ᓄᓇ ᐅᖓᓯᓐᓂᖓ ᐱᔪᑕᐅᓇᔭᕐᑐᑦ, ᐅᖓᓯᓐᓂᒋᑦ ᐱᓕᕆᐊᖃᕋᔭᕐᑐᑦ ᑐᓐᖓᕕᒋᑦ, ᐊᒻᒪ ᐱᒻᒪᕆᐅᓘᔪᖅ ᐃᒪᕐᒥᐅᑕᓕᕆᓂᕐᒧᑦ ᐃᖃᔪᕆᐊᕋᔭᕐᑐᑦ ᐊᑐᐃᓐᓇᐅᖏᓐᓂᒋᑦ ᐊᑐᐃᓐᓇᐅᑎᑦᑎᒋᔭᕐᑕᐅᓗᐊᕐᐳᖅ ᑕᒪᓐᓇ ᐃᒪᕐᒥᐅᑕᓂᒃ ᖃᐅᔨᒪᔪᓂᒃ ᑭᐅᓇᔭᕐᑐᓂᒃ.

ᑖᒃᑯᐊ ᐊᑐᐃᓐᓇᐅᕆᐊᒃᑲᓗᐊᕐᑎᓪᓗᒥᑦ, ᐃᑲᔪᕐᑕᐅᔪᓐᓇᕐᑐᑦ ᑕᐃᒪᐅᕙᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ: ᓴᓗᒻᒪᖅᐃᔪᑦ ᑲᔪᓯᐊᕈᓐᓇᕐᑐᑦ ᐅᖅᓱᐊᓗᑉᓗ ᑯᐱᕙᓪᓕᐊᔪᖅ ᓴᕐᕙᐅᕙᓪᓕᐊᓂᖓ ᒪᓕᒃᓗᒍ ᖃᐅᔨᒪᔾᔪᐅᔪᓐᓇᕐᑐᑦ, ᐃᑯᐊᓪᓚᒃᑎᑦᑎᕙᓪᓕᐊᓗᑎᒃ ᓄᑎᓐᖑᕙᓪᓕᐊᔪᓐᓇᕈᑎᒃ ᐱᓕᕆᐊᖃᕋᔭᕐᑐᑦ, ᐃᓱᕐᕋᑎᑦᑎᒥᐊᕐᓗᑎᒡᓗ ᓯᕗᒥ ᓴᓗᒻᒪᖅᐃᓇᔭᕐᑐᓂᒃ ᐊᔪᕐᑕᒥᓐᓂᒃ ᑲᔪᓯᐊᕐᑎᑦᑎᓗᑎᒃ. ᐱᓕᕆᐊᕈᔭᕐᑐᑦ ᐊᑖᓂ ᐅᓂᒃᑲᕐᑕᐅᓯᒪᕗᑦ.

ᖃᐅᔨᓴᐃᓂᕐᓗ ᒪᓕᒃᐸᓪᓕᐊᓂᕐᓗ ᐱᓕᕆᐊᕈᓐᓂᒋᑦ ᑲᔪᓯᑎᑕᐅᒥᐊᖅᑐᑦ ᖃᐅᔨᒪᓂᐊᖅᑕᑦ ᓇᓂ ᑯᐱᐊᖅ ᐃᓂᖃᕐᒪᖔᑦ ᖃᓄᕐᓗ ᐊᓯᑎᒥᓐᖓᖔᑦ ᖃᐅᔨᒪᐃᓐᓇᕐᓂᐊᕐᒪᑕ, ᐱᓗᐊᕐᑐᒥᒃ ᐊᑯᓂᐅᔪᖅ ᑕᒪᓐᓇ ᐱᓕᕆᐊᖑᒥᐊᖃᓪᓚᕐᓯᔭᕐᑦ. ᐅᖓᓯᒃᑐᒥ ᖃᐅᔨᓴᕐᑐᑦ ᑎᒋᕐᔫᒃᑯᑦ ᖃᐅᔨᓴᕐᑕᐅᒥᐊᖃᕐᓂᐊᕐᑐᑦ ᒥᐊᕕᒃᑲᑦᑕᕐᑐᓂᑦ ᖃᐅᓯᐃᕐᑐᒥᑦ, ᐃᒃᐱᐊᕐᔪᒋᑦ ᒥᑦᑎᒪᑕᓕᒋᓪᓗ ᖃᐅᔨᓴᕐᑕᐅᕙᒃᑲᓗᑎᒃ. ᑯᐱᐊᑦ ᓯᑯᒥ ᐃᒪᕐᕈᓐᓂᖅ ᐊᖓᓂᐅᔪᒥ ᐅᐊᕐᓇᓯᑎᓪᓗᒍ ᐅᓗᓐᐊᓇᕐᑎᓪᓗᒍ ᖃᐅᔨᓴᕐᑕᐅᒥᐊᖃᕐᓂᐊᕐᑐᑦ ᖃᓐᖓᑦᑎᑦᑕᐅᓯᒪᔪᒃᑯᑦ ᐊᓯᐊᓂᐊᕈᓘᑎᒃ.

ᐅᒥᐊᕐᔪᐊᑦ ᐊᑐᐃᓐᓇᐅᖏᓐᓂᒋᑦ ᓈᒻᒪᒃᑐᑦ ᔫᑐᐃᕝᕕᐅᕙᓪᓕᐊᔪᓂᒃ ᐅᓯᓇᔭᕐᑐᑦ ᓴᑐᐃᕙᓪᓕᐊᓇᔭᕐᑐᓪᓗ ᐋᖅᑭᐅᒪᒋᐊᖃᕐᑕᖃᕐᑕᐅᓇᔭᕐᑐᑦ ᐋᖅᑭᐅᒪᓂᖅᐅᔪᓐᓇᕐᓯᔫᑉᓚᓗᐊᓂᒃ. ᑯᐱᐊᓪᓚ ᐅᑭᐅᒃᑯᑦ ᖃᐅᓯᐃᑐᑦ ᖃᓂᒥᔭᖓᓂ ᐊᒻᒪ ᐊᐸᕕᑎᒥᔪᐅᔪᓂ ᐋᑦᔪᓴᑎ ᐃᓐᓚᑦ (Admiralty Inlet)-ᒥ ᒥᑦᑎᒪᑕᓕᒋᔫᓐᓂᑦ ᔫᑐᑦᑕᐅᔪᓐᓇᑐᐃᓐᓇᕆᐊᖃᕐᓂᐊᕐᑐᑦ ᐊᐅᓐᓇᓯᑎᓪᓗᒍ. ᐅᖅᓱᐊᔫᑉ ᑲᑎᓐᓂᖓᔭᖓ ᓵᑐᑎᓪᓗᒍ ᓯᑯ ᑕᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ ᓇᒧᒃᑖᓯᒪᓇᔭᕐᑐᖅᐳᖅ ᓯᑯ ᓯᕗᑉᑎᑉᐸᓪᓕᐊᑎᓪᓗᒍ ᐃᖏᕐᕋᕙᓪᓕᐊᓕᕐᐸᑦ ᕿᑭᑦᑖᓗᑉ ᐃᒪᖓᓄᑦ.

ᑯᐱᐊᖅ ᐃᑯᐊᓪᓚᒃᑎᑕᐅᕙᓪᓕᐊᔪᓐᓇᑐᐃᓐᓇᕆᐊᖃᕐᓂᐊᕐᐳᖅ, ᓴᓗᒻᒪᖅᑕᐅᕙᓪᓕᐊᑎᓪᓗᒍ ᐊᒻᒪ ᐃᒪᕐᓗ ᒪᓂᕋᐅᓂᐅᔪᒥ ᐅᑭᐅᒃᑯᑦ ᐃᖏᕐᕋᕙᓪᓕᐊᑎᓪᓗᒍ ᑯᐱᐊᖅ ᐃᑭᑎᑕᐅᔪᓐᓇᑐᐃᓐᓇᕆᐊᖃᕐᓂᐊᕐᐳᖅ. ᓯᕗᓪᓕᖅᐹᒃ ᐅᖅᓱᐊᓗᒃ ᑲᑎᓯᒪᑦᑎᐊᑎᓪᓗᒍ ᐃᑯᐊᓪᓚᒃᓴᐃᑑᔪᓐᓇᕐᐳᖅ, ᐱᓗᐊᕐᑐᒥᒃ ᓴᐳᒥᔭᐅᒃᐸᑕ ᓯᑯᒥᑦ ᑲᑎᓯᒪᑎᐊᑐᕐᓂᑦ ᓈᓴᐅᑎᖏᑦ ᒪᓕᒃᓗᒥᑦ 6/10-ᒥᑦᐸᑕ ᐅᖓᑖᓄᑦᑐᖓᓂᑦ ᐅᕝᕙᑐᖓᓂᑦ ᐊᓄᓐᓄᑦ ᐊᒃᑐᑦᑕᐅᑦᑕᐃᓕᔪᐅᒃᐸᑦ ᑯᐱᓂᐅᔪᖅ ᓯᑯ ᑲᑎᓯᒪᓂᖓᓄᑦ. ᐅᑭᐅᒃᑯᑦ ᑯᐱᐊᖃᕐᓂᕐᐸᑦ ᑕᒪᓐᓇ ᑯᐱᓂᑯ ᐊᐅᒃᐸᓪᓕᐊᓇᓯᑎᓪᓗᒍ ᐃᑭᑎᑕᐅᔪᓐᓇᕐᓂᐊᕐᑐᖅ ᐃᖏᕐᕋᕙᓪᓕᐊᓕᕐᐸᑦ ᐊᐅᒃᐸᓪᓕᐊᓂᐅᔪᒧᒃ ᑲᑎᓪᓗᓂ ᑲᑎᑎᓪᓗᒍ ᐃᑭᑎᑕᐅᔪᓐᓇᕋᔭᕐᓂᐊᖅ. ᑕᒪᓐᓇ ᐱᓕᕆᐊᕈᓐᓇᕐᓂᐊᕐᑎᓪᓗᒍ ᐅᑭᐅᒃᑯᑦ ᑲᒪᒋᔭᐅᒋᐊᖃᕋᔭᕐᐳᖅ ᖃᐅᔨᓴᕐᑕᐅᓂᖓ ᓯᑯᓗ ᑎᑭᑕᐅᓯᒪᓂᖓ ᐅᖅᓱᐊᓗᖓᓐᓄᑦ ᖃᐅᔨᓴᕐᑕᐅᒋᐊᓇᓱᐊᕐᑲᐅᔭᕐᓗᓂ, ᒪᓕᒃᓗᒍ ᑯᐱᐊᑉ ᐊᓯᐊᓂᖓ ᓇᓃᓐᓂᖓᓗ, ᐃᑯᐊᓪᓚᒃᑎᑦᑎᔪᑦᑕᐅᔪᑦᑐᓗ ᓇᓂᑦᑕᓇᐊᖅᓯᒋᓐᓂᒃ ᖃᐅᔨᒪᔪᐅᒋᓐᓇᕐᓗᑎᒃ ᖃᐅᔨᓴᕐᑕᐅᒋᓐᓇᐊᕐᑲᕐᓗᑎᒃ.

ᐅᖅᓱᐊᓗᒋᒃ ᑲᑎᑎᑦᑎᔪᑦᑕᐅᔪᖅ ᐊᑯᓐᓂᕐᔪᐅᔪᖅ ᐊᑐᕐᑕᐅᔪᓐᓇᕐᓂᖓ ᐊᓯᓗᐊᕐᔪᓯᕐᑐᓯᐅᕗᖅ ᑕᐃᑲᓂ ᓄᓇᒥᓂᐅᔪᒥ ᐊᑐᕐᑕᐅᓂᖓ, ᐅᖓᓯᓐᓂᖓ ᐃᓯᒪᓕᒧᒃ ᐊᒻᒪ ᐃᓯᕐᕋᑎᑕᐅᓕᕐᑲᕐᓂᖓ ᑎᒋᒃᑕᐅᓇᔭᕐᑐᑦ ᐊᓯᓂᖓᓗ ᐊᑐᐃᓐᓇᐅᓇᔭᕐᓂᖓ ᐊᓯᓗᐊᕐᔪᓯᕐᑐᓯᐅᕗᖅ. ᐅᖅᓱᐊᓗᒃ ᐅᖅᓱᐊᓗᖕᖏᓘᓐᓃᑦ ᐊᓯᓗᐊᓯᑐᐊᖅᓯᖑᖏᑦ ᑯᐱᐊᖅ ᑲᑎᑲᐅᑐᕐᓇᓯᒪᖏᑦ ᐅᖅᓱᐊᓗᑐᐃᓐᓇᕐᑲᐅᑐᕐᓗᓂ ᐅᖅᓯᓱᕐᔪᕐᓗᓂᓘᓐᓃᑦ, ᑯᐱᓚᐅᐱᓪᓚᑐᐃᓐᓇᕐᑎᓪᓗᒍ ᑖᖓᑐᐃᓐᓇᖅ ᓇᒧᑐᐃᓐᓇᖅ ᓯᐊᒻᒪᒃᑲᐅᑐᕐᑎᓪᓗᒍ ᑯᐱᓂᐅᔪᖅ ᓯᐊᒻᒪᒃᑕᐃᓕᔪᑎᒥᒃ ᐊᑐᕐᑕᐅᓇᓯᓗᓂ ᓈᒻᒪᒐᓱᒋᓪᓚᕐ.

ᓯᕗᒥ ᐋᖅᑭᒪᑎᑦᑎᔪᑦᑕᐅᓯᒪᔪᑦ ᑯᐱᐊᖃᓯᑎᓪᓗᒍ ᓄᖅᑲᖓᔪᑎᖃᖃᑦᑕᓂᐊᕐᐳᑦ ᐃᑲᔪᕐᓇᐊᕐᑐᓯᑦ ᐊᑐᐃᓐᓇᐅᖏᓐᓂᒋᑦ ᐱᔪᑎᒥᓗᒥᑦ. ᓯᕗᐅᑉ ᓯᓇ ᑕᒪᐃᓐᓂᖅᑲᔭᖅ ᐊᓄᓐᓗᑦ ᑎᑭᑕᐅᓯᒪᔪᓐᓇᓯᔪᒪᑦ ᐊᒻᒪ ᑕᓇᐅᑉ ᖃᓄᐃᑉᐸᓪᓕᐊᓂᖓᓄᑦ ᓯᑯᓗ ᓯᕗᑉᑎᑉᐸᓪᓕᐊᑎᓪᓗᒍ ᑎᑭᑕᐅᓯᒪᐃᓐᓇᐅᔪᑉᐸᓗᓂ ᓯᕗᑉᑎᑉᐸᓪᓕᐊᔪᒧᑦ ᓯᑯᒧᑦ, ᓴᓗᒻᒪᖅᑕᐅᕆᐊᖅᓯᒪᓂᖏᓐᓄᑦ ᐱᕆᐊᖅᑲᐅᔪᑦ ᐅᓗᓐᐊᓗᐊᕐᑐᒥᒃ ᑎᑭᑕᐅᐅᓯᒪᔪᑐᐊᑉᐸᑦ ᐊᓂᐊᓕᕈᑕᐅᔭᕐᑐᒥᒃ. ᓯᕗᐅᑉ ᓯᓈ ᓴᓗᒻᒪᖅᑕᐅᕆᐊᖃᕐᓂᖓᓄᑦ, ᐃᓕᖅᑯᓯᑐᖃᕐᓇᑦ ᐅᑎᑦᑎᑕᐅᓇᓱᓐᓂᐊᕐᓂᖓᓄᑦ ᐋᖅᑭᓱᕐᑕᐅᔪᑎᒥᓂᐊᑕᕐᑦ ᓇᓗᓇᐃᕐᑕᐅᔪᓐᓇᕐᑐᑦ ᒪᓕᒃᑕᐅᓗᑎᒃ ᐊᕙᓗᒥᐅᑕᓄᑦ ᐃᒃᐱᒋᔭᖃᖅᓴᐃᑐᑦ ᐊᒻᒪ ᐅᖅᓱᐊᓗᒋᒃ ᑯᐱᐊᒥᖅ ᐋᖅᑭᐊᓯᒃᓯᔪᐅᔪᑦ ᐊᑐᕐᑕᐅᓗᑎᒃ ᑕᒪᐃᓂᒃ ᐊᑐᕐᑕᐅᓗᑎᒃ ᐃᓕᖅᑯᓯᑐᖃᕐᓇᔪᐅᔪᓄᑦ ᐅᑎᑦᑎᑕᐅᓇᓯᒍᓐᓇᕐᑐᑦ ᒪᓕᒃᓗᒥᑦ ᓄᓇᖑᐊᒥ ᐋᖅᑭᒃᑕᐅᓯᒪᔪᖅ. ᐃᑲᔪᕐᑐᑕᐅᓂᖅᐅᒥᐊᖃᕐᐳᑦ ᐃᑯᐊᓪᓚᒃᑎᑦᑎᓗᑎᒃ ᓴᓗᒻᒪᖅᐃᔪᑕᐅᕙᒃᑐᑦ ᐊᓯᐊᒎᖅ (ᓰᖅᓗ ᐃᒥᖅᓂᒃᑯᑦ, ᐃᑯᐊᓪᓚᒃᑎᑦᑎᓂᒃᑯᑦ, ᐱᓗᐊᕿᔪᑕᐅᔪᕕᓃᑦ ᐋᖅᑭᒃᑕᐅᕙᓪᓕᐊᓂᒋᑎᒎᑦ) ᐋᖅᑭᐅᒪᓂᖅᑐᐃᓐᓇᕈᓘᓐᓂᑦ ᓈᒻᒪᒋᓐᓂᐅᔪᖅ.

ᑖᓐᓇ ᓄᓇᖑᐊᖅ ᑐᕌᖓᒋᓪᓚᖅ ᐊᒃᑯᕕᐅᕙᒃᑐᓄᑦ, ᑐᓴᕐᓴᐃᑦ ᓈᒻᒪᓂᒋᒻᒪᑕ ᖃᐅᔨᓴᐅᓂᑯᐃᑦ ᑐᓴᕐᓴᓂᒃ ᐱᑕᖃᕐᓂᒋᒻᒪᑕ ᖃᐅᔨᓴᕐᑕᐅᓯᒪᒋᑎᓪᓗᒥᑦ ᑕᒪᐃᓐᓂᒃ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒥ ᐃᓚᖅᑯᓯᖓᔪᐅᔪᑦ ᐱᑕᖃᕐᓂᒋᓪᓚᑦ, ᑯᕕᔪᕐᑎᓪᓗᒍ ᑭᓯᐊᓂ ᖃᐅᔨᒪᔪᐅᓇᔭᕐᑐᑦ ᖃᐅᔨᒪᒃᓴᐅᓇᔭᕐᓂᖏᑦ ᓴᖅᑭᔮᕆᐊᖅᑕᐅᓗᐊᕐᐳᖅ. ᐃᓚᖅᑯᓯᖓᔪᐅᓇᔭᕐᑐᑦ ᓄᓇᒧᑦ ᐃᒃᐱᒋᔪᐅᓇᔭᕐᑐᓄᑦ ᐊᒃᑯᕕᐅᔪᓂ ᐊᑯᓂ ᐃᒃᐱᒋᔪᐅᕗᓃᔭᕐᑐᓄᑦ ᐱᓕᕆᐊᒍᓇᔭᕐᑐᑦ ᐃᓚᖅᑯᕐᑐᑦ ᓄᑦᑎᕐᑎᕐᑕᐅᓂᒋᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐊᒃᑯᕕᑦ ᑲᑎᑕ-

ᐅᓂᒃ ᐊᑕᐅᓯᕐᒧᑦ ᑲᑎᑕᐅᓂᑯᐱᓃᑦ ᓴᓗᒪᖅᑕᐅᑉᓗᑎᒃ ᖃᑉᓗᓈᑦ ᓄᓇ-
ᖏᓐᓄᑦ ᐊᐅᓪᓚᕐᑎᑕᐅᓂᖏᑦ, ᐅᕝᕙᓘᖕᓃᑦ ᑕᒡᕙᓂ ᐃᓂᒥᐅᔪᒥ ᐊᑕ-
ᑰᕐᑕᐅᓗᑎᒃ ᐃᑯᐊᓪᓚᒃᑎᑕᐅᓂᖏᑦ.

ᐃᓂᒥᐅᔪᑦ ᑎᑭᑕᐅᓴᕋᐃᓐᓇᐅᕐᓂᖏᑦ ᐱᓯᒪᓇᐅᑎᑕᐅᕗᑦ ᓇᓂᓗᐃᓐᓇᖅ
ᓯᕗᓂ ᓴᓗᒪᖅᑕᐅᓇᐅᕐᑐᓂ ᐃᓄᕐᑕᐅᖏᓐᓂᖏᑦ ᓴᓗᒪᖃᐃᕝᕕᐅᓂᐊᕐᑐᑦ
ᐱᓯᒪᓇᐅᑎᐅᑕᕗᑦ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕᓂ. ᓄᓇᖑᐊᖅ ᐱᖕᓯᐃᓕᖕ-
ᔪᓂᒃ ᐃᓄᕐᑕᐅᖏᕐᑐᓂᒃ ᑕᑯᔭᐅᑎᕐᑎᕗᖅ.

1. ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐊᕐᖁᑎᒥᓴᐅᔪᓐᓇᕐᑐᑦ ᑐᓴᒐᔭᐃᑦ
ᐊᑐᐃᓐᓇᐅᑎᑕᐅᕗᑦ ᑐᓴᒐᔭᓕᑦ ᐅᒥᐊᔪᐊᓕᓐᓂᕐᒧᑦ
ᑐᓴᒐᔭᓕᐊᖑᕙᒃᑐᓂᑦ, ᐃᓛᐅᑎᑕᐅᕗᑦ ᑐᓴᒐᔭᓂ ᐃᖏᕐᕋ-
ᓂᐅᔪᑦ ᐊᓅᕐᓂᐅᔪᒥᕐᑐᑦ, ᐅᓗᕐᑕᕐᓂᖅ ᑎᓂᕐᑕᕐᓂᖅ,
ᓄᓇᒥᐅᔪᒥ ᓯᑯᐃᑦ ᐃᓕᖅᑯᓯᖏᑦ, ᐃᑲᕐᓇᒃᔪᑕᐅᓇᐅᕐᑐᑦ,
ᐊᒻᒪ ᑐᓚᒃᑕᕐᕕᐅᔪᓐᓇᕐᑐᑦ ᓂᐅᕋᐃᕝᕕᐅᔪᓐᓇᕐᑐᓪᓗ.

2. ᑎᖏᕐᐱᒃᑯᑦ ᐱᓕᕆᐊᖑᓇᓱᕐᑐᓄᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ
ᐊᑐᐃᓐᓇᐅᖏᕐᑐᓪᓗ ᒪᑯᐊ ᐃᓯᒪᒥᓴᐅᓰᖑᕗᑦ ᑕᑭᓂᖏᑦ
ᒥᑦᑕᕕᑦ, ᖃᖏᑦ ᐊᒻᒪ ᒥᑦᑕᕕᑦ ᐃᓕᖅᑯᓯᖏᑦ ᖃᓂᒋᔭᖕᓂ
ᖃᓄᐃᑦᑐᕆᐊᖃᖏᓐᓂᒃ.

3. ᐅᑭᐅᒃᑯᑦ ᐊᕐᖁᑎᒥᓴᐅᕙᒃᑐᑦ ᐊᑐᐃᓐᓇᐅᓂᖏᑦ ᖃᐅᔨᒪᓴᐅᕗᑦ
ᒪᓕᒃᓱᒥᑦ ᐅᑭᐅᒃᑯᑦ ᐊᑐᕐᑕᐅᕙᒃᑐᑦ ᑐᓴᒐᔭᖏᑦ ᓄᓇᒃᑯᓪᓗ
ᐃᖏᕐᕋᔪᑕᐅᕙᒃᑐᑦ ᑐᓴᒐᔭᖏᑦ ᒪᓕᒃᓱᒥᑦ ᐊᕐᖁᑎᒥᓴᐅᕙᒃᑐᑦ.

ᐃᒪᒃᑯᑦ ᐃᓂᒥᐅᓇᓱᕐᑐᑦ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᕗᑦ ᑭᓯᐊᓂ ᐊᐅᔭᒃᑯᑦ ᐊᕐᖁ-
ᑎᒥᓴᐅᔪᓇᕐᑐᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ. ᑎᖏᕐᐱᒃᑯᑦ ᐊᑐᐃᓐᓇᐅᔪᓇᕐᑐᑦ
ᒪᑯᐊᖑᕗᑦ ᑎᖏᕐᐱᒃᑯᑦ ᕼᐊᓚᒃᑲᑉᑖᒃᑯᓪᓗᖕᓂᑦ ᐃᖏᕐᕋᓂᐅᔪᑦ. ᐅᑭᐅᒃᑯᑦ
ᐊᕐᖁᑎᒥᓴᐅᓰᑦ ᒪᑯᐊᖑᕗᑦ ᓄᓇᒃᑯᑦ ᓯᑭᒃᑯᓪᓗᖕᓂᑦ ᐅᑭᐅᓗᒃᑖᕐᖃᔭᖅ
ᐊᕐᖁᑎᒥᓴᐅᔪᓇᕐᑐᑦ ᐅᖁᒪᐃᑐᓂᒃ ᓄᑎᕐᔪᒃᑕᐅᔪᓇᕐᑐᑦ (ᑎᓴᒪᐅᔪᓄᑦ
ᒪᐃᒧᑦ). ᐊᕐᖁᑏᑦ ᐊᑐᐃᓐᓇᐅᖏᓗᐊᕐᓂᖏᑦ ᐊᐅᔭᕐᓗ ᓇᐃᓗᐊᕐᑎᓪᓗᒍ
ᓴᓗᒪᖃᐃᓂᕐᒧᑦ ᓯᖕᔭᐅᑉ ᓴᓂᐊᓂ ᐅᑭᐅᒥᑦ ᒪᕿᒃᑯᕐᑕᐅᖃᑦᑕᕐᓂᐊᕐᐳᖅ
ᑕᒪᐃᓐᓂᖅᑲᔭᖅ ᓴᓗᒪᖅᑕᐅᔪᓂ.

ᑐᓚᒃᑕᕐᕕᐅᔪᓐᓇᕐᑐᑦ ᐅᓗᓂᐊᓇᖏᑦᑐᑦ ᓯᑲᐅᒃᑯᑦ ᐅᓯᓕᑐᕐᕕᐅᔪᓐᓇᕐ-
ᑐᑦ/ᐋᖅᑭᐅᒪᔭᐅᓇᓯᑐᓄᑦ ᐊᐅᓚᑕᐅᕕᐅᔪᓐᓇᕐᑐᑦ ᐅᖅᓯᐊᕐᑎᓪᓗᒍ ᐊᒻᒪ
ᐊᓅᕐᕕᐅᖏᑐᒥ ᐃᒪᒥ. ᓄᓇᖑᐊᖅ ᐊᑐᓕᖁᔦᖅ "ᐅᓗᓂᐊᓇᖏ-
ᑐᓂᒃ ᑐᓚᒃᑕᕐᕕᐅᓇᓱᑐᓂᒃ" ᐃᒪᓇᐃᓕᖕᓂᒃ ᐊᑐᓕᖁᔭᓕᐊᕐᐳᖅ:

1. ᐃᒃᐱᒋᔭᖃᕐᓴᐃᑐᖅ – ᐃᓂᒋᔭᐅᓂᐊᕐᑐᖅ
ᒫᓂᐅᒥᐊᖃᕐᐳᖅ ᒪᓕᒃᓗᒍ ᓄᓇᖑᐊᒥ
ᐅᓗᓂᐊᓇᖏᓂᕐᓴᕐᑕᐅᔪᖅ ᐃᒃᐱᒍᓱᖕᓴᐃᓇᖏᑐᒥ
ᐃᒃᐱᒍᓱᖕᓴᐃᓇᖏᓛᖁᔨᒥᓗ.

2. ᑎᑭᑕᐅᓴᐃᓐᓂᖅ – ᐃᓂᒋᔭᐅᔪᖅ ᐃᒪᒃᑯᑦ
ᐊᕐᖁᑎᒃᑎᐊᓂᐊᖃᕐᐳᖅ ᐃᑎᔫᓗᓂᓗ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ
ᑎᑭᑕᐅᔪᓈᕐᑐᒥᐊᖃᕐᐳᖅ.

3. ᐊᓄᓂᑦ ᓴᐳᓐᓂᐊᕐᑕᐅᓂᐅᔪᖅ – ᐋᖅᑭᐅᒪᓂᖅ ᓇᓅᓐᓂᖅ
ᑲᖏᕐᓘᑉ ᑐᓚᕝᕕᐅᕙᒃᑑᑉᓗᓐᓃᑦ ᐃᓂᖅ
ᓴᐳᓐᓂᐊᕐᕕᐅᔪᓐᓇᕐᓗᓂᐅᒥᐊᖃᕐᑐᖅ ᐊᓄᓂᑦ ᑕᓇᐅᒥᓪᓗ
ᓯᐊᒻᒪᒃᕕᐅᑦᑕᐃᓚᒪᓗᓂᓗ ᐅᖅᓯᐊᓗᒃᒧᑦ ᑕᒪᐅᓐᒥᐊᖅ
ᓯᐊᒻᒪᒃᑕᐃᓕᑎᓪᓗᒍ ᐃᓕᖅᑐᕐᕕᐅᔪᓐᓇᕐᓗᓂ
ᓯᐊᒻᒪᖏᓐᓂᐅᔪᒥᒃ.

ᒪᓕᒃᑕᐅᔪᒃᓴᑦ ᐊᑐᖅᐸᒃᑐᓄᑦ: ᐊᕙᓗᒥᐅᑕᐃᑦ ᐊᒻᒪ ᐋᖅᑭᐅᒪᔭᐅᓇᓱᒃᓂᖏᑦ

ᓱᕐᕃᓂᕐᒥᒃ ᐃᓱᒪᒋᓗᒋᑦ ᐊᔾᔨᒌᙱᑦᑐᑦ

ᓱᕐᕃ ᐊᔾᔨᒌᙱᑦᑐᑦ ᓄᓇᖑᐊᒥ ᑕᐃᔭᐅᔪᑦ ᒪᑯᐊᖑᕗᑦ: ᑰᑉ ᑲᑎᙵᔪᑦ ᐅᓕᑦᑕᕐᓂᕐᒧᑦ ᑎᓂᑦᑕᕐᓂᕐᒧᑦ ᐊᒻᒪᓗ ᑲᖏᕐᓗᐃᑦ, ᓱᕐᕃᑦ, ᐃᒪᕐᔨᐃᑦ, ᓱᕐᕃ ᒪᓂᕿᐅᓃᑦ, ᖁᕐᕃᓯᒃᑐᑦ ᓱᕐᕃᑦ, ᓱᕐᕃᑦ ᑐᓐᖓᕕᖏᑦ, ᐃᓛᒃ-ᑰᖓᐅᑦᑐᑦ ᓱᕐᕃᑦ, ᐅᔭᕋᖅᓂᐅᔪᒥ ᓱᕐᕃᑦ, ᐃᓐᓈᕈᖅᓂᐅᔪᒥ ᓱᕐᕃᑦ ᐊᒻᒪ ᐱᖃᓗᔭᐃᑦ ᐊᖏᕈᓪᓚᖑᐅᔪᑦ. ᑐᓴᕐᓴᑦᑖᕈᔪᑦ ᐊᔾᔨᒌᙱᑦᑐᑦ ᓱᕐᕃ-ᖑᓂᕆᒃ ᐅᖃᐅᓯᖃᕐᑐᑦ ᐊᑕᐅᓯᐅᖏᑦᑐᒥᑦ ᑐᓴᕐᓴᑦᑖᕈᓚᐅᕐᓂᕐᑦ ᐃᓚᐅᑎᑕ-ᐅᔪᑦ ᐊᕙᓗᒥᐅᑕᐃᑦ ᐃᓕᖅᑯᓯᖏᓐᓄᑦ ᐅᓂᒃᑳᔪᓂ ᐋᖅᑭᐅᒪᑎᑦᑎᓯᔪ-ᑕᐅᓇᓱᒃᑲᕐᓂᐊᕐᑐᓂ ᐱᓕᕆᐊᕈᔪᓂ ᐅᖃᐅᓯᐅᔪᑦ. ᐅᓂᒃᑳᑎᐊᕐᓯᒪᔪᑦ ᓱᕐᕃᓂᒃ ᐅᖃᐅᓯᓕᑦ ᖃᓄᐃᑦᑐᕆᐊᖅᓯᕐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᖓᓂ Ȧ-ᒥ ᑎᑎᕋᕐᓯᒪᕗᑦ.

ᑭᓯᐊᐅᕙᒃᑐᑦ

ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᒪᓕᒃᑕᐅᔪᒃᓯᓂᒃ ᐃᒪᖓᓯᕐᔪᑕᐅᔪᑦ ᐅᖃᐅᓯᑦᑐᑦ ᑲᓇᑕᖓᓂ (2,3) ᐅᓂᒃᑳᑕᐅᓗᑎᒃ ᑎᑎᕋᑕᐅᓯᒪᒃᑲᐅᕗᑦ.

ᐅᓗᕆᐊᓇᕐᑐᑦ ᑐᓚᒃᑕᕐᕕᑦ

ᐅᓗᕆᐊᓇᕐᑐᑦ ᓯᑲᐅᓄᑦ ᐅᒥᐊᕐᔪᐊᕐᒥᑦ ᓂᐅᕋᐃᕝᕕᐅᓇᔭᕐᑐᑦ ᓇᓗᓇᐃᑦᑕᓚᐅᕐᑐᑦ ᓄᓇᖑᐊᓂ ᐅᑯᐊ ᒪᓕᒡᓗᒋᑦ:

1. ᐃᒃᐱᒍᓱᒃᓴᐃᓲᓇᔭᖅᐸᑕ ᐱᓕᕆᐊᖅᕕᐅᔪᑦ, ᐃᒃᐱᒋᔭᖅᓴᓗᐊᕐᓗᑎᒃ ᐃᒃᐱᒋᔭᕐᑦ ᐊᕐᓗᐊᕐᐸᑕ,
2. ᓄᓇᖑᐊᒥ ᐃᒪᖅ ᐃᓚᐅᑎᑕᐅᔪᖅ ᐅᖃᓯᒪᓂᖅ ᐅᒥᐊᕐᔪᐊᑦ ᐃᑎᔫᓂᕈᓐᓇᕐᑐᑦ ᑎᑭᕈᓐᓇᕐᓗᑎᒃ ᐃᓂᒋᔭᐅᔪᒧᑦ, ᐊᒻᒪᓗ
3. ᑲᕐᓗᒃ ᓄᓇᐅᓂᕐᒧᓐᓃᑦ ᑲᕐᓘᔪᖅ ᐊᑐᐃᓐᓇᐅᑎᑦᑎᓗᓂ ᐊᓄᕋᐅᕐᓂᐅᔪᒥᒃ ᐅᖁᐊᕐᒥᒃ ᐅᖅᓯᐊᓗᒃ ᑯᐱᕙᓕᐊᔪᖅ ᑕᒪᐅᖓᑐᐃᓈᕐᕙᓕᐊᕐᑎᓪᓗᒍ ᖃᑕᐅᔮᕐᑕᐅᕙᓕᐊᔭᓇᖏᓪᓗᒍ.

ᐅᓗᕆᐊᓇᕐᑐᑦ ᑭᓯᐊᐅᖃᑦᑕᓱᑦ ᓇᓗᓇᐃᑦᑕᐅᓂᕐᑦ ᑭᓕᖃᑎᑦᑕᐅᒪᖅ ᓄᓇᖑᐊᓕᐊᕈᓯᒪᔪᒥ ᐃᒪᒃᑯᑦ ᖃᐅᔨᓴᑕᐅᔪᓂ ᓇᓂᑐᐃᓐᓇᖅ. ᑭᓴ-ᕕᐅᔪᒧᑦ ᐅᓗᕆᐊᓇᕐᑐᑦ ᐅᖃᐅᓯᐅᖃᑦᑕᕗᑦ ᓄᓇᖑᐊᓕᐊᕈᓯᒪᔪᓂ.

ᓱᕐᕃᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐊᕐᖁᑎᖏᑦ

ᖃᔪᓐᖑᐊᑦ ᓇᓗᓇᐃᒃᑯᑕᐅᕗᑦ ᐃᖃᓐᓂᐅᔪᓂ ᓯᑲᐅᓄᑦ ᑐᓚᒃᑕᕐᕕᐅᔪᓂ ᓂᐅᕋᐃᓂᐊᕐᑎᓪᓗᒋᑦ ᑐᓚᒃᑕᕐᕕᒋᒃᑲᒃᑕᕐᑐᑦ ᓱᕐᕃ ᓴᓇᓂᓗ ᓱᕐᕃᐅᑉ. ᑕᒪᓐᓇ ᐊᑐᐃᓐᓇᐅᓂᖓ ᓱᕐᕃᐅᑉ ᓴᓈᑕᓗ ᑭᓪᓕᖅᑎᑕᐅᒥᒐᕐᒥᖅ ᓯᑯ ᑕᓪᓚ-ᐅᕐᑎᓪᓗᒍ ᑐᕙᐃᓯᒪᑎᓪᓗᒍ ᑕᕆᐅᖅ. ᐊᑐᐃᓐᓇᐅᓇᔭᕐᓂᕐᑦ ᓱᕐᕃᑦ ᖃᐅᔨᔭᐅᓚᐅᕐᑐᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐊᕐᖁᑎᓯᐅᕙᒃᑐᑦ ᒪᓕᒃᐸᒃᑕᕐᓂᑦ ᐅᑭᐅᑦᑕᑐᒥ ᑲᓇᑕᒥ ᐃᕐᕋᖅᑲᑦᑕᕐᑎᓗᒥᑦ (2,3), ᐃᒪᒃᑯᑦ ᓄᓇ-ᖑᐊᖑᐊᑦ (4) ᐊᒻᒪ ᓄᓇᓕᖕᓂᕐᒧᑦ ᐃᒪᐅᑉ ᖃᖓᓂ ᐱᓕᕆᐊᖅ-ᓂᕐᒧᑦ ᓄᓇᖑᐊᑦ (7)-ᒦᑦᑐᑦ.

ᐅᑭᐅᒃᑯᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐊᕐᖁᑎᒋᔭᐅᓂᑦ

ᓯᑯᒃᑯᑦ ᐊᕐᖁᑎᒋᔭᐅᔪᑦ ᓇᓗᓇᐃᑦᑕᐅᕗᑦ ᓄᓇᖑᐊᒥ ᓄᓇ ᐊᑐᑦᑕᐅᕙᓐᓂᖓᓄᑦ ᓄᓇᖑᐊᓕᐅᕐᔪᒥ. ᐊᕐᖁᑎᒋᔭᐅᓃᑦ ᐅᑭᐅᒃᑯᑦ ᐊᖑᓇᓯᒃᑎᓄᑦ ᐅᓂᒃᑳᑕᐅᔪᑦ ᓱᕐᕃ ᐃᒃᐱᒋᔭᐅᓴᐃᑐᓂ ᓇᓗᓇᐃᑦ-ᑕᖃᑕᐅᓯᒪᒋᕗᑦ ᐊᖑᓇᓯᒃᓂᕐᒧᑦ ᐱᓕᕆᐊᖅᕕᐅᕙᒃᑐᑦ.

ᒥᑦᑕᕕᑦ

ᑐᐃᓐ ᐋᑕ ᑎᕆᔩᑦ ᐅᖃᓯᒪᕗᑦ 800m (2,600 ft) ᐅᖓᓯᓐᓂᖏᑦ ᕿᒪᒃᑕᐅᓯᒪᔪᑦ ᑐᐊᕕᑦᓇᑐᖅᑯᓗ ᐊᑐᑦᑕᐅᔩᑦ ᒥᖅᕕᐅᓗᑎᒃ ᓈᒻᒪᒃᓂᓴᐸᒃᑐᑦ ᒥᖅᕕᐅᖃᑦᑕᓂᐊᕐᔪᒃᑲᓂᒃ ᑎᕆᔩᓄᓗ ᒥᑭᔪᓄᑦ ᐅᓯᔩᓄᑦ 6,000 kg ᐅᖁᒪᐃᓐᓂᖅᑐᒥᒃ ᐊᒻᒪ ᐊᕐᓂᖅᓂᒃ ᐅᖁᒪᐃᓐᓂᖅᑐᓂᒃ (ᑐᐃᓐ ᐋᑕ, ᑖᒃ 7, ᐸᕙᓗ). ᓄᓇᐅᑉ ᒪᓂᕆᖓ ᖃᖓ ᐊᔾᔨᒌᙱᑦᑑᔪᓐᓇᕐᒪᑦ ᓇᐹᖅ-ᑐᖅᑐᑦᑐᒥ ᓄᓇᐅᓗᓂ ᓯᐅᕿᐅᓗᓂ ᐅᖓᓯᓐᓃᑦ ᑐᐊᕙᐅᓗᓂ. ᓇᓗᓇ-ᐃᒃᑕᐃᑦ ᐅᖃᓯᒪᔪᑦ ᕿᒪᒃᑕᐅᓂᑯᑐᐃᓐᓇᐅᓂᕐᓂᒃ ᐃᓱᒪᒋᔭᐅᒥᐊᖅᑐᑦ ᒥᖅᕕᐅᔪᓐᓇᕐᓂᕐᓂᒃ ᑐᐃᓐ ᐋᑕᐃᓐᓇᕐᓄᑦ ᑎᕆᔩᓪᓗᓄᑦ ᐊᖏᓗᐊᖅᑐᓄᑦ ᖁᕙᓯᑦᑐᓂᒃ ᖃᐅᔨᓴᑕᐅᖃᓂᓯᒪᕆᑎᓪᓗᒋᑦ ᑕᐃᒪᓐᓇᐃᑦᑐᓄᑦ ᑭᓯᐊᓂ ᑎᕆᔩᓄᑦ ᒥᖅᕕᐅᔪᓐᓇᕐᒪᑦ. ᑎᕆᔩᑦ ᐃᕐᕋᖅᑲᑦᑕᕐᓯᔪᓐᓇᖅᑕᕐᑦ ᐊᕕᒃ-ᑐᓯᒪᓂᐅᔪᒥ ᐃᕐᕋᖅᑲᑦᑖᕐᕕᐅᔪᓐᓇᕐᓂᖅᑕᐅᕗᑦ ᒥᑭᔪᓄᑦ ᑎᕆᔩᑦᑐᓐᓇᕐᓄᑦ Hᐊᓚᑳᑦᑕᓄᓗ ᖁᓕᒨᓕᖕᓄᑦ.

ᐳᑎᒃ ᐃᐅᓯᐱᓯ (British Aerospace 748 ᐅᖓᓯᓐᓃᑦ ᕚᒃ (Fokker F-27) ᒥᑐᓐᓇᕐᒪᑦ ᑕᑭᓂᖅᑐᓄᑦ 1,100m -ᓂᒃ (3,600 ft). ᒥᑦᑕᕕᑦ ᒥᖅᕕᐅᔪᓐᓇᖅᑐᑦ ᐅᓗᕆᐊᓯᐊᒦᕐᒪᑦ ᒪᕋᓕᕿᒥ (ᑲᒥᒃᑯ) ᐊᒻᒪ ᒥᑦᑎᒪᑕᓕᖕᒥ.

ᓛᒃᕼᐃ ᕼᐅᑯᓖᔅ (Lockheed Hercules (CC130) ᒥᕐᕕ-
ᖃᕈᓐᓇᖅᑐᓂᒃ ᑎᑭᓪᓗᒍ ᑕᑭᓂᖅᑐᓄᑦ 1,500m (5,000 ft)
ᑐᐊᕙᒋᑦ ᐃᑦᑕᕐᓂᕐᓂᖓᓂᒃ ᓈᒻᒪᖕᖏᑦᑎᓪᓗᒋᑦ ᑎᖕᒥᔫᑉ ᐃᑦᑕᕐᓂᕐᓂᖓᓂᒃ
(ᕼᐅᑯᓖᔅ, ᐃᓚᒃᑐᕿ, B737). ᒥᕐᕕᐅᔪᓐᓇᖅᑐᑦ ᑐᓄᒃ ᐳᐃᖑᖅᐳᑦ
ᐊᒻᒪ ᓇ ᐳᐃᖑ ᖃᐅᓯᐃᖅᑐᑉ ᕿᑭᖅᑕᐅᒐᒋᕐᓂ (ᐹᕐᐋᑎᒃ ᐅᖅᓱᐊᓗᓕ-
ᓇᕈᒋᑦ), ᓇᓂᓯᕕᖕᒥ ᐳᐊᑐ ᐱᕐᓂᕐᓯᓚ (ᒥᑦᑕᕕᒃᑯᓐᑎᒃ ᐃᒃᐱ-
ᐊᔪᒥ), ᐊᒻᒪ ᖃᐅᓯᐃᖅᑐᒥ.

ᑭᐹᓇᒃᑐᒥᒃ ᐊᕙᓗᓕᓯᒪᔪᑦ ᑐᐃᕐ ᐋᑕᕐᖑᐊᑦ ᑎᑎᕋᐅᓯᒪᔪᒥ ᓇᓗ-
ᓇᐃᒃᑯᑕᐅᕗᑦ ᐊᑐᖅᑕᐅᖃᖅᑕᖅᑐᕕᓂᖅᓄᑦ ᐊᐅᓚᖅᑎᕐᕕᐅᓗᑎᒃ ᒥᑦᑕᕕ-
ᐅᒋᕐᓇᐅᔭᕝᕙᒃᑐᑦ ᐅᑭᐅᒃᑯᑦ ᒋᑭᕐᕕᐅᓯᕗᑦ. ᓇᓗᓇᐃᒃᑯᑕᐃᑦ ᐊᑐᐃᕐ-
ᓇᐅᑎᖅᑎᓂᕿᐃᔾᔭᑕᐅᒋᓚᑦ ᑖᒃᑯᐊ ᒥᑦᑕᕕᐅᔪᑦ ᑭᓯᒥ ᒥᑦᑕᕕᐅᒥ-
ᐊᖃᖅᓂᒋᕐᓂᒃ ᓯᑯᒥ ᒥᖃᑦᑕᖅᑐᓄᑦ. ᒥᕐᕕᐅᔪᓐᓇᖅᑐᑦ ᒪᓂᕿᐅᖅᑎᐊᖅᑎᓪᓗᒥᑦ
(ᒪᓂᕿᐅᖅᑎᐊᖅᑎᓪᓗᒍ, ᐊᐳᑎᐅᑉ ᐃᓕᖅᑯᓯᖕ ᓈᒻᒪᒃᑎᓪᓗᒍ, ᓯᑰᑉᓗ
ᐃᕙᓂᖕ ᓈᒻᒪᒃᑎᓪᓗᒍ) ᑎᖕᒥᔫᑦ ᖃᓄᖅ ᐊᒃᑎᒥᒥᐊᖃᖅᓂᒋᑦ ᑭᓪᓕᖃ-
ᒋᓚᑦ ᓯᕗᐅᑉ ᖃᓂᒥᔭᖕᓂ ᒥᑐᓇᖅᑐᑦ ᓯᑯᒥ ᒥᕐᕕᐅᓯᒥ. ᓯᑯᓕ ᒪᓂᕿ-
ᐅᒋᕐᓂᖁᐅᑎᓪᓗᒍ ᑕᒪᒃᑯᐊ ᑐᐃᕐ ᐋᑕᐃᑦ ᑭᓯᒥ ᓯᑭᖅᑯᑦ ᐊᒋ-
ᔭᓂᒃ/ᑯᐊᖕᓗᐊᖅᑐᓪᓗᕐᓃᑦ ᒥᑐᕐᓇᖅᓂᕿᖅᑕᐅᓰᕗᑦ. ᐃᒪᒃᑯᑦ ᒥᕐᕕ-
ᐅᔭᕐᓇᖅᓂᐅᔭᑦ ᓯᑯ ᑐᕙᐃᓯᒪᑎᓪᓗᒍ ᐃᓯᒪᓰᑕᐅᔭᕐᓇᖅᐳᑦ ᑎᖕᒥᓰᖅᑎᓄᑦ
ᓄᓇᕐᔪᐊᓂᓗ ᐃᓚᐅᑎᑕᐅᒋᓚᑦ ᐃᒪᒃᑯᑦ ᒥᑦᑕᕕᐅᕙᒃᑐᑦ.

ᑭᒋᖅᓗᐃᑦ ᓯᕕᑐᓂᒋᑦ ᑐᓚᒃᑕᕐᕕᐅᔭᓂ ᓂᐅᕿᐃᕐᕕᐅᓰᓂ

ᑭᒋᖅᓗᐃᑦ ᑐᓚᒃᑕᕐᕕᐅᓰᑦ ᓂᐅᕿᐃᓂᐊᖅᑎᓪᓗᒥᑦ ᐆᒃᑐᕿᖅᑕᐅᓂᖁᐸᑦ ᐃᒪᒃᑯᑦ
ᓄᓇᕐᔪᐊᓕᐊᕐᔪᓯᒪᔭᓂᑦ (4) ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕᓂ
ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔭᒥ.

ᐃᓂᒥᔭᐅᑎᑕᐅᓚᐅᐱᓪᓚᒃᑐᑦ ᑲᑎᑕᐅᓂᑯᓄᑦ ᐃᓂᒋᑦ

ᐊᒃᑰᕐᕕᐅᖃᑦᑕᕿᔭᕐᑐᑦ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᒋᓚᑦ ᓈᓐᓂᕐᓂᐊᖅᓚᖓᑕ ᑐᓴᒐᖅ
ᐊᒥᓚᓚᐅᖅᓚᑕ ᓴᖅᑭᖅᑎᒃᔾᔭᑕᐅᔭᖅᑐᑦ ᐃᓂᒥᔭᐅᓇᔭᖅᑐᓂᒃ ᓇᓗᓇᐃᕐᓯ-
ᒪᔭᓇᒋᖕᒪᑕ ᖃᐅᔨᓴᐃᖅᑎᐊᕐᓯᒪᒋᓪᓗᑎᒃ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔭᒥ ᓇᓂᖕᒪᓇᒃ
ᐃᓂᒥᔭᐅᓇᔭᖅᑐᓂᒃ ᐅᖃᐅᓯᖃᕐᓇᒋᖕᒪᑕ ᖃᐅᔨᓴᕐᓯᒪᒋᓪᓗᑎᒃ ᖃᐅᔨᐊ-
ᓂᒃᓯᒪᒋᓪᓗᑎᒃ. ᐱᓕᕆᐊᖑᖅᑕᖅᑎᕿᔭᖅᑐᑦ ᐃᓚᖃᐅᖅᐳᑦ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔭᒥᑦ
ᐊᒃᑕᐃᑦ ᐊᐅᓪᓚᖅᑎᑕᐅᕙᓪᓕᐊᓂᒋᑦ ᑲᐸᓗᓈᑦ ᓄᓇᒋᕐᓄᑦ ᑲᑎᑕᐅᓂᑯᐃᑦ
ᐅᖅᓱᐊᓗᒃᓗᑎᑦ ᑯᕕᔭᕕᓂᖅᓂ ᐅᕙᓘᕐᓃᑦ ᐃᑯᐊᓪᓚᒃᑎᑕᐅᒥᐊᖅᑐᖅᑎᑕ-
ᐅᔭᖕᖏᑦ ᓄᒃᑎᖅᑕᐅᒋᓪᓗᑎᒃ ᑭᐅᒃᔭᖅᑕᐅᔭᕐᓇᕿᓯᒥᔭᐅᒥᕗᑦ ᐃᑭᑎᑕᐅᔭᖅᓂᖓ
ᐅᖅᓱᐊᓘᑉ ᓄᒃᑎᖅᑕᐅᒋᓪᓗᓂ ᑯᕕᔭᕕᓂᖅ ᐃᓄᑐᖃᖓᓂ ᐃᑭᑎᑕᐅᔭᖅ-
ᓂᖓ ᐱᓕᕆᐊᖑᖃᑕᐅᔭᕆᕙᑦ ᐃᓯᒪᒥᔭᐅᕗᖅ. ᐊᒃᑯᓄᑦ ᐃᓂᒥᔭᐅᓚ-

ᐅᐱᓪᓚᒃᑎᑕᐅᔭᖅᑐᑦ ᑲᑎᑕᐅᓂᑯᓄᑦ ᓄᓇᕐᔪᐊᓂ ᓇᓂᖓᕙᑕ ᓇᓗ-
ᓇᐃᖅᑕᐅᓯᒪᕗᑦ ᓯᕗᖅᑲᖅᑐᕐᓂᐅᔪᒥ ᐊᒻᒪ ᓯᕗᐃᑦ ᓯᓈᓂ ᑐᖅᓱᕐᔪᐊᒃᓄᑦ
ᐃᓚᐅᑎᑕᐅᕗᑦ ᐅᓂᖅᑲᖅᑕᐅᓯᒪᔪᓂ ᓈᓂᓇᕐᓇᖅᓯᒪᑦ. ᑯᕕᔭᖅᑲᖅᑎᓪᓗᒍ
ᑲᑎᑕᐅᓇᔭᖅᑐᑦ ᑲᑎᑕᐅᔪᒥᑦᑲᖅᑐᖅᑐᓂᑦ ᓄᓇᖅᑐᖅᑲᑦ ᖃᐅᔨᒪᔭᕆᔭᐅᓗᓂᒃ
ᓇᓂᓂᐊᓕᖅᑐᓂ. ᐃᓂᕆᔭᐅᑐᑦ ᑲᑎᑕᐅᔪᑦ ᑲᑎᑕᐅᓂᒃᐸᑕ ᖃᐅᔨᒪᔭᕿᒃᑲᓂᕐᓇᖅᑐᑦ
ᐅᓗᓇᐊᓇᕐᑐᒥᒃ ᐊᑐᕐᑎᑦᑎᓂᐊᕐᒪᖔᑦ ᐃᑦᑕᕐᓂᑕᐃᑦ ᐃᓂᑐᖅᑲᓇᔭᕐᓇᕐᓄᑦ.

ᓄᓇᒥ ᐃᒪᖁᓗ ᓄᓇᕐᔪᐊᑦ ᑎᑎᕋᐅᔭᕐᓯᒪᔪᑦ

ᒫᓇ ᓄᓇᕐᔪᐊᑦ ᐃᒪᖁᑦ ᓄᓇᒥᓪᓗ ᓇᓗᓇᐃᒃᑯᑖᖅᑐᑦ
1;250,000 ᐊᑐᐃᓐᓇᐅᕗᑦ ᐆᒪᖅᑯᑎᓕᕐᓂᕈᒃᑯᓐᓂᑦ,
ᐅᔭᕿᖅᓂᐊᖅᑐᓕᕐᓂᕈᒃᑯᓐᓂᑦ ᑲᓇᑕᒥ (7) ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓄᑦ
ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒧᑦ.

ᐃᒪᒃᑯᑦ ᓄᓇᕐᔪᐊᓕᐊᕐᔪᓯᒪᔪᑦ

ᒫᓇ ᓄᓇᕐᔪᐊᑦ ᐃᒪᒃᑯᑦ ᐊᑐᐃᓐᓇᐅᕗᑦ ᑲᓇᑕᒥ ᐃᒪᖅᓄᑦ ᓄᓇᕐ-
ᔪᐊᓕᐅᖅᕕᖕᒥᑦ (4) ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓄᑦ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔪᒧᑦ.
ᓄᓇᕐᔪᐊᑦ ᐊᖏᓂᒋᑦ ᓇᓗᓇᐃᒃᑯᑕᖅᐅᖅᐳᑦ 1:500,000-ᒥᑦ
1:25,000-ᒧᑦ, ᑭᓯᐊᓂ, ᑕᒪᐃᓐᓂᖅᑲᔭᖅ ᐊᕕᒃᑐᕐᓯᒪᓂᐅᔭᖅ
ᓇᓗᓇᐃᒃᑯᑕᖅᑎᑕᐅᖅ 1:500,000-ᓂᒃ.

ᑕᖅᓇᔭᐅᑎᖕᖏᑦ ᑏᕖᒃᑯᑦ

ᑕᖅᓇᔭᐅᑎᖕᖏᑦ ᐅᓄᖅᓂᒋᑦ ᐅᖃᐅᓯᐅᔭᑦ ᐅᖃᐅᓯᖃᖅᐳᑦ ᑏᕖᒃᑯᑦ ᑕᑯ-
ᔭᐅᔭᕐᓇᖅᑐᑦ ᑕᖅᓇᔭᐅᑎᑦ ᐅᓄᖅᓂᒋᕐᓂᒃ. ᓯᑕᒪᐅᓕᖑᔭᑦ ᑕᖅᓇᔭᐅᑎᖕᖏᑦ,
ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᓂᒃ ᑕᖅᓇᔭᐅᓯᐅᓯᒪᔭᑦ ᐊᑐᐃᓐᓇᐅᕗᑦ ᑲᓇᑕᒥ
ᐅᖅᓱᐊᓗᓕᓇᕈᒃᑯᓐᓂᑦ ᑲᐸᓂᐅᔭᒥᑦ (6,11) ᐊᒻᒪ ᐊᖅᓛᕐᑎᒥ
ᓄᓇᓕᓇᕐᕕᐅᔭᒥ ᐱᓕᓇᕐᕕᒃᔭᐊᒥᑦ (1,10).

ᐊᐸᖑᑏᑦ ᐊᑐᐃᓐᓇᐅᓂᒋᑦ ᐋᖅᑭᐅᒪᔾᔭᑕᐅᓇᓱᒃᑐᓪᓗ

ᐊᐸᖑᑏᑦ ᐊᑐᐃᓐᓇᐅᓂᒋᑦ ᐋᖅᑭᐅᒪᔾᔭᑏᓪᓗ ᑐᕌᖕᖏᑦ ᐅᓂᒃᑲᖅᑕᐅᓯᒪᕗᑦ
ᐃᓛᒃᑯᑦ ᓄᓇᕐᔪᐊᓂ.

ᑐᕌᖕᑖᕐᕕᐅᔭᑦ

ᑐᕌᖕᑖᕐᕕᐅᔭᑦ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᕗᑦ ᓈᓴᐅᑎᑦ ᐊᑐᖅᓗᒋᑦ ᐊᕙᓗᖅᑲᖅ-
ᑎᑕᐅᔭᑦ ᐅᓂᒃᑲᖅᑕᐅᔭᒥ ᑐᕌᖅᑕᐅᔭᕕᓃᑦ ᐊᒃᑐᐊᓂᖅᑐᑦ ᐊᕙᓗᒥᐅᑕᐃᑦ
ᐃᓕᖅᑯᓯᕐᓂᕐᓂᒃ ᐊᒻᒪ ᐋᖅᑭᐅᒪᑎᑕᐅᓇᓱᒃᑐᑦ.

ᒪᓕᒃᑕᐅᔪᒃᓴᑦ ᐊᑐᕋᒃᑐᓄᑦ: ᓯᒡᔭᐅᑉ ᓯᓈᓂ ᓯᒡᔭᐅᔾᔨᓂᐅᔪᒥᒍ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᑐᓄᑦ

ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓂᐅᔪᒧᑦ

ᓇᓄᓇᐃᒃᑯᑕᖕ A ᑐᓴᒐᖕᓂᒃ ᐊᑐᐃᓐᓇᐅᑎᑦᑎᕗᖅ ᐊᒻᒪ ᐅᓂᒃᑳᑎ- ᐊᕐᒪᔪᑦ ᐊᑐᐃᓐᓇᐅᕗᑦ ᑐᑭᓯᒋᐊᕈᑕᐅᔪᓐᓇᖅᑐᑦ ᖃᓄᖅ ᐃᒃᐱᒍᓯᒃ- ᓴᖅᑎᒥᒋᐊᖕᖏᓐᓂᒃ ᐅᖃᐅᓯᐅᔪᑦ ᓄᓇᐅᑉ ᖃᓂᒋᔭᖕᖏᑦᑐᑦ. ᐋᖅᑭᒃ- ᑕᐅᓯᒪᕗᑦ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓐᓂᐅᔪᑦ (ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓐᖑᐊᔪᑦ, ᐃᒃᐱ- ᒍᓯᒍᐊᒃᔪᐊᖅᓴᑦᑐᑦ, ᐃᒃᐱᒍᓯᒐᔭᑦᑐᑦ ᐊᒻᒪ ᐃᒃᐱᒥᔭᒃᑯᐊᖅᓴᖕᖏᑦᑐᑦ) ᓄᓇᖕᖑᐊᓂ ᑕᐃᒪᓐᓇ ᐋᖅᑭᐅᒪᔭᐅᕙᒍᑎᒃ ᑕᑯᔅᓴᐅᑎᑕᐅᕗᑦ.

ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕ 108-ᓄᑦ ᐊᐸᒍᖅᑕᐅᓯᒪᕗᖅ ᐃᒃᐱᒍᓯᖕᖃᐃᓐᓂᐅᓂ- ᖃᖅᑕᐅᔪᑦ ᓯᒡᔭᐅᑉ ᓯᓈᓂ ᐃᓂᐅᔪᑦ ᐋᖅᑭᒃᑕᐅᓯᒪᐸᓗᑎᒃ ᓄᓇᖕᖑᐊᓂ ᑕᑯᔅᓴᐅᑎᑕᐅᕗᑦ. ᑕᒪᐃᓐᓂᒃ ᓯᒡᔭᐅᑉ ᓯᓈᓃᑦ ᐱᒥᐊᖅᓗᑎᒃ ᖃᓂᒋᔭᖕᖏᓐ 1 ᑭᓛᒥᑕ ᓯᒡᔭᐅᔾᔨᑐᒧᑦ ᑎᑭᓪᓗᑎᒃ ᐊᒻᒪ ᑎᑭᓯᒪᕙᓗᑎᒃ ᑎᓂᖅᑕᖅᓂᐅᑉ ᐃᓯᐊᓄᑦ. ᓯᒡᔭᐅᑉ ᓯᓂᖕᖓᓂ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓐᖑᐊᓇᔭᑐᑦ ᐃᒃᐱᒍᓯᖕ- ᖃᐃᓐᓇᔭᖅᐳᑦ ᒪᐃᒥᑦ ᐊᒃᑐᐳᓇᒧᑦ, ᐅᖅᓯᐊᓗᒃ ᓯᒡᔭᒧᑦ ᑎᑭᓪᓗᓂ ᑯᐱᔪᓐᓇᖅᑎᓪᓗᒍ ᐅᕙᓗᒃᑯᓐᓂᑦ ᓯᒡᔭᐅᑉ ᓯᓈᓄᐊᕈᓐᓇᖅᑎᓪᓗᒍ. ᓇᐃᒡᓕᒥ- ᐊᖅᑕᐅᓯᒪᔪᖅ 3 ᓇᓄᓇᐃᔭᓯᒪᕗᖅ ᐃᒃᐱᒥᔭᐅᓴᖃᐃᓗᐊᖅᑐᓂᒃ ᖁᓪᓕᓯ- ᓖᖁᔪᓂᒃ ᐅᓗᓇᐊᓇᖅᑐᒥᒃ ᐊᑐᖅᐱᐅᓗᐊᖅᓴᑐᓂᒃ.

ᐃᒃᐱᒥᔭᐅᓴᖃᐃᓐᓇᔭᑐᑦ ᐅᓂᒃᑳᖅᑕᐅᕗᑦ ᒪᓕᒡᓗᒥᑦ ᓯᓚᐅᑉ ᐃᓕᖅᑯᓯᖕ. 12-ᖑᕗᑦ ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᓂᒥᔭᐅᔪᑦ ᐅᖃᐅᓯᐅᔪᑦ ᒪᐃ ᐱᒥᐊᓕᐋᓯᖅ- ᑎᑦᓗᒍ ᐋᒡᒐᒧᑦ, 19 ᐃᓂᒥᔭᐅᐸᓗᑎᒃ ᐋᒡᒐᓯᒥᑦ ᐱᒥᐊᓕᓵᖅᑎᑦᓗᒍ, ᐊᒃᑐᐳᓇᒧᑦ, 7-ᖑᐸᓗᑎᒃ ᐃᓂᒥᔭᐅᔪᑦ ᐊᑐᓇᐊᓕᓵᖅᑎᑦᓗᒍ ᐊᒃᑐᐳᓇ ᓄᓇᖑᐊᑕ ᖃᓂᒋᔭᖕᖑᓄᑦ ᑎᓴᒪᓇᐅᐸ ᐊᒻᒪ 11-ᖑᐸᓗᑎᒃ ᐃᓂᒥᔭᐅᔪᑦ ᐊᑐᖅᑕᐅᕙᒃᑐᑦ ᔭᓄᐊᓇᒥᑦ ᒪᐃ ᐊᑐᓇᐊᓕᓵᖅᑎᑦᓗᒍ. ᑭᒡᓕᒥᔭᐅᔪᑦ ᓯᒡᔭ- ᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᑐᓐᓇᑐᓄᑦ ᒪᓕᒃᑎᑕᐅᕗᑦ ᐅᐱᓐᖑᕐᒃᑯᑦ ᐅᑭ- ᐊᒃᓵᒃᑯᑦ ᐊᐅᔮᒃᑯᑦ ᐅᑭᐅᒃᑯᓪᓗ ᑭᒡᓕᒥᔭᐅᑎᑕᐅᔾᔪᓂᒃ ᓯᑯᖃᖅᑎᑦᓗᒍ ᓇᓄᓇᐃᒃᑯᑕᓇᔭᐅᔾᔪᓂ ᐊᒻᒪ ᐃᒪᐅᓗᖅᑎᑦᓗᒍ. ᑯᐱᔪᖃᖅᓂᐸᑦ ᐅᖅᓯᐊ- ᓗᖕᒥᒃ, ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᖃᖅᓴᑐᑦ ᐊᒃᕿᒥᔭᐅᔾᔨᑐᒪᓇᐅᑐᐃᓐ- ᓇᓇᐊᖅᑐᑦ ᓄᓇᖕᖑᐊᒥ ᐃᒃᐱᒥᔭᐅᓂᐊᖃᓯᒥᔭᐅᔪᑦ ᓯᑯᐃᑦ ᐃᓕᖅᑯᓯᖕᒋᑦ ᒪᓕᒡᓗᒥᑦ ᐱᓗᐊᕿᔪᖃᖅᓂᖅᑎᑦᓗᒍ.

ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓐᓂᐅᔪᖅ ᐱᒥᐊᖅᓗᒍ ᒪᐃᒥᑦ ᐊᒃᑐᐳᓇᒧᑦ ᒪᓕᒃᑎᑕᐅᓯᒍᕗᑦ ᓯᒡᔭᒥ ᐃᒃᐱᒥᔭᐅᓴᖃᐃᑐᓂᒃ, ᑕᒪᒃᑯᐊᓕ ᓯᒡᔭ- ᐅᔾᔨᓂᖏ ᐃᒃᐱᒥᔭᒃᐅᖃᖅᓴᐃᑐᑦ ᐊᒃᑐᐳᓇᒥᑦ ᒪᐃᒧᑦ ᐃᓖᒃᑯᖕᑎᑕᐅ- ᖃᖅᑕᖅᑎᑦᓕᒥᑦ ᓯᒡᔭᒥᑦ ᐃᒃᐱᔭᒥᔭᐅᓴᖃᐃᑐᓂᑦ.

ᓯᓚᐅᑉ ᖃᓄᐃᓐᓂᖏᑦ

ᓯᒡᔭᐅᑉ ᓯᓈᓂ ᐃᒃᐱᒍᓯᒃᓴᖅᖃᐃᓐᓇᖅᑎᑦᓗᒍ (ᒪᐃ ᐱᒥᐊᓕᓵᖅᑎᑦᓗᒍ ᐊᒃᑐᐳᓇ ᐊᑐᓕᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ) ᐅᖃᐅᓯᖃᖅᐳᖅ ᐅᖅᓯᐊᓗᒃ ᓯᒡᔫᓯ- ᒪᓕᐊᓂᒃᑎᑦᓗᒍ ᑕᑯᔅᓴᐅᑎᑕᐅᔪᓐᓇᐃᑎᑦᓗᒍ ᐊᐳᑦ ᐊᐅᒃᑎᑦᓗᒍ. ᐅᖅᓯ- ᐊᓗᒃ ᑯᐱᔪᐱᓂᖅ ᓯᑯᒥ ᑯᐊᖅᑎᑦᓗᒍ ᓯᒡᔫᐊᖅᓂᐊᕐᕆᓪᓗ ᓯᑯ ᑭᓯᐊᓂ ᓯᖁᐸᖅᑎᑉᓕᐊᓕᖅᐸᑦ ᓯᒡᔫᖅᓴᖅᓗᓂ ᔫᒃ ᓄᓇᖕᖑᐊᓂ ᔪᓚᐃᒥᔾᔪᓐᓂᑦ. ᖃᖕ ᐅᖅᓯᐊᓗᒃ ᓯᒡᔫᒥᓐᓇᔭᖅᓂᖕ ᐅᐊᓕᓂᕗ ᐅᖅᑯᕗᐅᓂᒍ ᐊᒃᐲᒥᔾᔨᑐᓂ ᑕᖅᑭᖅᓂ ᓂᕆᐅᒥᔭᐅᔪᓐᓇᖅᐳᑦ, ᐊᑕᐅᑎᒃᑯᖅᓴᔾᔨᒪᑕ. ᐅᐸᓗᐃᑦ ᐊᒃᐲ- ᒥᔾᔨᑐᑦ ᓯᑯ ᓯᖁᐸᖅᑎᖅᓂᕆᔭᔾᔨᑦ ᓇᓄᓇᐃᖅᑕᐅᓯᒪᕗᑦ ᓄᓇᖕᖑᐊᒥ 6-ᒥ.

ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᐅᓴᖃᐃᓐᓇᔭᑐᖅ (ᒪᐃ ᐱᒥᐊᓕᓵᖅᑎᑦᓗᒍ ᐊᒃᑐᐳᓇ ᐊᑐᓕᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ) ᐅᓂᒃᑳᖅᑕᐅᔪᖅ ᐅᖃᐅᓯᖃᖅᐳᖅ ᓯᑯ ᑐᕌᐃᓯ- ᒪᑎᑦᓗᒍ. ᓄᓇᖕᖑᐊᖅ 7 ᑕᑯᔅᓴᐅᑎᑦᑎᕗᖅ ᐊᒃᐲᒥᔾᔨᑐᓂᒃ ᑲᓇᖕᓇᕐᒥᑦ ᐱᖕᖓᓄᑦ ᐃᒪᐅᓂᐅᖃᖅᑕᖅᑐᒥ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕᖓᓂ. ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᓐᓂᐅᔪᖅ ᒪᐃᒥᑦ ᐊᒃᑐᐳᓇᒧᑦ ᒪᒃᐃᓕᖕᖑᔭᐅᕗᖅ (ᒪᐃ ᐊᑐᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ ᐋᒡᒐ ᐊᑐᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ ᐊᒻᒪ ᐋᒡᒐᒥᑦ ᐊᑐᓇᐊᓕ- ᓵᖅᑎᑦᓗᒍ ᐊᒃᑐᐳᓇᒧᑦ ᐊᑐᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ) ᐊᕕᒃᑐᖅᓯᒪᓂᐅᔪᒥ ᓯᑯ ᓯᖁᐸᖅᑎᖅᓕᐊᓂᖕ ᑕᑯᔅᓴᐅᖅᑎᐊᖁᔭᐅᐸᓗᓂ. ᓯᑯ ᑕᖅᑭᖅᑎᐅᑉ ᐃᒪ- ᖕᓈᖅᑐᓐᓂᕈᓐᓇᖅᐳᖅ ᐊᒻᒪ ᐱᐊᓴ ᓯᑐᐃᕐᓂᑦ ᖃᓂᒋᔭᖕᖑᓂ ᔪᓚᐃᒥ ᐊᒻᒪ ᑲᔪᖅᓯᖅᓂ ᓯᑯ ᓯᖁᐸᖅᑎᓕᐊᕌᖑᐸᓗᓂ ᔪᓚᐃ ᓄᓇᖕᖑᐊᑕ ᖃᓂᒋᔭᖕᖑᓂ ᐅᖅᓯᐊᓗᒃᓄᓐᓂᑦ ᐋᒡᒐ ᐊᑐᓇᐊᓕᓵᖅᑎᑦᓗᒍ. ᖃᐅᓯᐃᑐᑦ ᖃᓂᒋᔭᖕ ᑭᓯᐊᓂ ᓯᑯᖃᖅᓂᖕ ᐊᒃᐲᒡᒐᓕᖅᑯᖅ, ᓯᑕᒪᑦ ᐱᖕᖓᓯᑦᓗᓐᓂᑦ ᐱᓇᓯᐊᕈᓯᑦ ᑭᓯᐊᓂ ᐱᐊᓂᒃᑎᑦᓗᒍ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕᖓᓂ ᑐᕌᐃᖅᓂᑯᑎᑦᓗᒍ ᑐᕌᐃᔮᖅᐸᒃᐳᖅ.

ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᐅᓴᖃᐃᓐᓇᔭᑐᖅ (ᐊᒃᑐᐳᓇ ᐱᒥᐊᓕᓵᖅᑎᑦᓗᒍ ᒪᐃ ᐊᑐᓕᓇᐊᓕᓵᖅᓂᖕᖑᓄᑦ) ᐅᖃᐅᓯᖃᖅᐳᖅ ᓯᑯ ᖃᓄᖅ ᐊᑯᓂᐅᑎᒥᔪᒥᒃ ᓯᒡᔭ- ᐅᔾᔨᑐᒦᐸᖅᓂᖕᖑᓂᒃ. ᓯᒡᔭᐅᔾᔨᑐᒥ ᐃᒃᐱᒥᔭᒃᖃᖅᓴᐃᑐᑦ ᐊᑯᓐᓂᖕᖑᓂ ᐊᒃᑐᐳᓇ ᐊᒻᒪ ᒪᐃ ᒪᒃᐃᓕᖕᖑᔭᐅᕗᖅ (ᐊᒃᑐᐳᓇ ᐊᑐᓇᐊᓕᓵᖅᑎᑦᓗᒍ ᑎᓴᒪᓇ ᐊᑐᐊᓂᓕᖅᓂᖕᖑᓄᑦ ᐊᒻᒪ ᔭᓄᐊᓇᓕᑦ ᒪᐃ ᐊᑐᓇᐊᓕᓵᖅᓂᖕᖑ- ᓄᑦ) ᑕᑯᔅᓴᐅᑎᖅᑎᔾᔪᑕᐅᔪᒪᐸᓗᓂ ᐅᑭᐅᒃᑯᑦ ᐊᕕᒃᑐᖅᓯᒪᓂᐅᔪᒥ ᓯᑯᕌᓕ- ᓕᐅᓂᐅᔪᒥᒃ ᐊᒻᒪ ᐊᓅᓴᔾᔭᐊᖅᓂᐅᕌᒃᑐᑦ ᓇᓃᐸᖕᒪᖕᖓᑕ ᖃᐅᑉᓚᒃᔪᑕ- ᐅᖁᔭᐅᐸᓗᑎᒃ ᓯᒡᔭᐅᑉ ᓯᓈᓂ ᐃᓕᖅᑯᓯᕙᔭᐅᕌᒃᑐᑦ ᑕᑯᔅᓴᐅᑎᑕᐅᕗᑦ. ᑎᓴᒪᔪᖅᑎᑦᓗᒍ ᓯᑯ ᐱᐊᓴ ᓯᑐᐃᕗᑐᖅ ᑲᑎᓯᖁᔭᐅᕗᖅ ᐊᒻᒪ ᐃᔾᔪᖅᓂᐅᔪᑦ ᓯᑯᐃᑦ ᑲᔪᖅᓱᖅᓄᑦ ᑲᑎᓕᖅᓗᑎᒃ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖕᖓᓂᑦ. ᓯᓈ ᑕᓪᓗ- ᕈᑎᐅᑉ ᐃᒪᖕᖓᑕ ᓯᑯᑕᐅᓯᒪᔪᖅ ᒫᓯ ᓄᓇᖕᖑᐊᓂ, ᐊᒥᓯᒪᓇᐅᔪᑦ ᓯᓂᒥ- ᔭᐅᔪᓂ ᓇᓂᑐᐃᓐᓇᖅ ᓯᑯᓯᒪᓕᖅᓯᒪᓕᖅᑎᑦᓗᒥᑦ ᐊᑯᓂᐅᔪᖅ.

ᐃᓂᒥᔭᐅᔪᑦ ᐱᓪᓚᕆᐅᑎᑕᐅᓪᓚᕆᒃᑐᑦ

ᐃᑦᑕᕐᓂᑕᐃᑦ ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᐳᑦ ᑲᓇᑕᒥ ᖃᐅᔨᓴᕐᑎᓂᑦ ᐃᑦᑕᕐᓂᑕᓕᕆᓂᕐᒧᑦ ᓄᓇᖑᐊᓂ ᑕᒪᐃᓐᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓂᑯᐃᑦ ᓴᖅᑮᔭᕐᑎᑕᐅᔭᐃᓐᓇᐅᕗᑦ. ᐅᖓᓯᒐᓗᐊᕐᒥᒃ ᑯᐱᔭᖃᕐᓂᕙᑦ, ᐃᑦᑕᕐᓂᑕᓕᕆᓂᕐᒧᑦ ᖃᐅᔨᓴᐃᔨᑦ ᑲᓇᑕᒥ ᐅᖃᐅᓯᐅᒥᐊᖃᕐᐳᑦ ᑐᓴᕐᕕᐅᔭᓚᐅᖅᑎᒃ ᓇᓃᑦᑕᕆᐊᓯᐊᖑᓂᒃ ᐃᑦᑕᕐᓂᑕᖃᕐᕕᐅᔪᑦ ᐃᓂᖏᑦ ᓯᓇᐅᒥᐊᓯᐊᖑᓂᖓ ᑐᓴᕆᐊᕐᕕᐅᓗᑎᒃ.

ᐅᑭᐅᖅ ᓈᓚᒃᑎᓪᓗᒍ ᐊᕙᑎᓕᕆᕙᐅᔪᑦ ᐋᖅᑭᒃᑕᐅᖃᑦᑕᕐᐳᑦ ᐊᖏᕐᕋᓯᔭᐅᔪᓂ ᓂᕿᖅᓯᓯᔭᐅᓂᐊᕐᒪᑕ ᐊᕙᑎᓕᕆᕙᐅᔪᑦ. ᓄᓇᓕᖑᐋᕙᓚᐅᐱᓪᓚᓃᕙᐳᑦ ᐅᑭᐅᓗᒃᑳᖅ ᐊᑐᖅᑕᐅᖃᑦᑕᕐᓗᐊᕐᓗᑎᒃ.

ᓄᓇᓕᖑᐋᑦ ᓄᓇᓕᖑᐋᕙᐳᑦ ᐋᖅᑭᐅᒪᐃᓐᓇᕐᒥᒃ ᑕᐃᑲᓃᖏᓐᓇᐅᔭᕐᓂᐊᕐᒥᒃ ᐱᑕᖃᕈᑦ ᐊᑐᖅᑕᐅᕙᒃᑐᑦ ᐊᕙᑎᓯᓂᕐᒧᑦ ᐱᓕᕆᐊᖃᕐᒪᑕ ᐊᕙᑎᓯᒪᑦ.

ᐸᓚᖅᑐᑦ ᓄᓇᖏᑦ ᐋᖅᑭᒃᑕᐅᓯᒪᓂᖁᔪᑦ ᐸᓚᖅᑐᓄᑦ ᑕᑯᔭᐅᖅᑕᐅᔪᓐᓴᐅᑕᐅᕙᓪᓗᑎᒃ.

ᐃᓄᒃᓯᐃᑦ ᓂᕈᑎᓄᑦᑐ ᓇᓗᓇᐃᒃᑯᑕᐃᑦ

ᐃᓄᒃᓯᐃᑦᑐ ᓂᕈᑎᓄᑦᑐ ᓇᓗᓇᐃᒃᑯᑕᖏᑦ ᕿᖓᓐᑐᔪᑦ ᓄᓇᕙᐊᓕᐊᕙᓯᒪᔪᓂ ᑭᓯᑐᐃᔪᑦ ᐃᓄᐃᑦ ᐊᑐᕋᒃᑕᖏᓐᓂᒃ ᓂᕈᑎᑦᑐ ᐊᑐᖅᑕᕙᓂᖏᓐᓂᒃ. ᓇᓗᓇᐃᒃᑯᑕᐅᔪᑦ ᐅᑯᓂᖓ ᑕᑯᔅᓴᐅᑎᑦᑎᔪᑦ: 1) ᐅᓄᖅᓂᖏᓐᓂᒃ ᐃᒪᕐᒥᐅᑦ ᓂᕈᑏᑦ ᓇᓄᐃᑦᑐᖓᓂᑦ ᐅᓄᖅᓂᖏᓐᓂᒃ, 2) ᑎᑭᕐᐊᑦ ᐊᓯᕐᕆᖏᑦᑐᑦ ᐅᓄᖅᓂᖏᓐᓂᒃ, 3) ᐱᓪᓚᕆᐅᑎᑕᐅᔪᑦ ᐊᒥᖅᓂᖏᓐᓂᒃ ᐃᒃᑲᓗᐃᑦ ᐊᓯᕐᕆᖏᑦᑐᑦ, ᐅᕙᓃᑦᑐᖓᓂᑦ 4) ᐊᐱᕐᑐᓯᒪᓂᐅᔪᒥ ᓄᓇᓕᖕᓄᑦ ᐱᓪᓚᕆᐅᑎᑕᐅᔪᑦ. ᓂᕈᑏᑦ ᓇᓗᓇᐃᒃᑯᑕᖏᑦ ᐊᑐᖅᑕᐅᓯᒪᔪᑦ ᑭᓯᐊᓂ ᐊᒥᓲᓄᑦ ᐊᑐᖅᑕᐅᖃᑦᑕᕐᑎᓪᓗᒥᑦ ᖃᐅᔨᔭᐅᓯᒪᔪᑦ ᐃᓚᐅᑎᑕᐅᔪᑦ, ᖃᐃᔾᔪᓇᐅᓂᖅᑕᐅᓪᓗᑎᒃ ᐊᓯᖏᓐᓂ ᓇᔪᖅᑲᐱᓐᓇᕋᓗᕐᑎᓪᓗᒥᑦ.

ᐃᒪᕐᒥᐅᑕᐃᑦ ᓂᕈᑏᑦ ᐊᕐᕕᑎᖑᑦ ᐅᐱᖕᖑᖅᓯᖅᑯᑦ (ᔪᓐ ᔪᓚᐃ) ᐊᓪᓚ ᐅᑭᐊᖅᓯᖅᑯᑦ (ᓯᑉᑕᒻᐳᓇ) ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᐳᑦ ᐱᓪᓚᕆᐅᓂᖅᑕᐅᓗᑎᒃ ᓂᕿᒥᔭᐅᕙᓐᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓗᑎᒃ. ᓯᕗᓪᓕᖏᓐᓂᒻᒥᒃ ᐃᒪᕐᒥᐅᑕᐃᑦ ᓂᕈᑏᑦ ᐊᒥᓲᖏᓐᓂᖅᐳᒪᔪᑦ ᓯᕗᒥᐅᑕᓂᐅᓐᖑᓂᑦ ᑕᒪᓐᓇ ᐱᔪᑎᒥᓗᒍ ᓂᕆᒥᔭᐅᖏᓐᓂᖅᐳᒪᔪᑦ ᓯᕗᒥᓗᐊᑉᐸᖏᑦᑐᑦ. ᑭᓯᐊᓂ, ᓯᕗᐅᖏᑐᒥ ᓯᑯᐃᑦ ᓯᓂᖏᑦ ᓇᓗᓇᐃᔭᐅᔭᕐᑕᐅᒪᔪᑦ ᐃᖏᕐᕋᓂᐅᔭᓂᒃ

ᐊᓯᐊᓅᖅᐸᓪᓗᓄᑦ ᓂᕈᑎᓄᑦ ᐃᓕᓐᓂᓗ ᓴᐳᓐᓂᐊᕈᑕᐅᔭᑎᑐᑦ.

ᐋᖅᑭᔅᓯᒪᕚᓪᓗᑎᒃ ᑲᑎᒪᐅᕐᓗᑎᒃ ᐃᒪᕐᒥᐅᑕᐃᑦ ᓂᕈᑏᑦ ᐃᖏᕐᕋᕙᓪᓕᐊᔪᑦ ᓄᓇᐅᑉ ᐊᔭᐃᓄᑦ ᐃᒪᒃᑯᑦ. ᐅᑭᐅᖅᑕᖅᑐᒥ ᒃᐸᐃᑐᒥ ᓯᑯ ᓯᓈ ᑎᑭᓯᒪᕋᑖᕐᑎᓪᓗ ᐊᑭᐊᓄᑦ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᑕ, ᐊᓪᓚ ᓯᖕᖑᐊᕐᓂᐅᔪᓐᓂ ᓯᑯ ᓯᓈ ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᐳᖅ ᐱᓪᓚᕆᐅᑎᑕᐅᓪᓚᕆᒃᑐᓂᒃ ᓂᕿᒥᔭᐅᕙᓪᓗᑎᒃ ᐱᒥᔭᐅᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓪᓗᐊᖅ.

ᐃᓄᖕᖑᐊᑦ ᓇᓗᓇᐃᒃᑯᑕᐅᔪᒧᑦ ᐃᓕᐅᖅᑲᖅᑕᐅᔪᑦ ᒥᑎᓚᑕᓕᖏᑦ ᑲᑎᒪᑕᓗᑎᓪᓗᒥᑦ ᓇᓗᓇᐃᖅᑕᐅᓗᑐᑦ ᐱᓪᓚᕆᐅᓂᖏᓐᓂᒃ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᑦ ᓇᓗᓇᐃᖅᑕᐅᓗᑎᒃ ᐅᕙᓃᑦᑐᖓᓂᑦ ᓇᓗᓇᐃᒃᑕᐅᓗᑎᒃ ᓄᓇᓕᐅᓂᖏᓐᓂᒃ.

ᑐᖑᔪᑦ ᓂᕈᑏᑦ ᑎᑎᕋᐅᔭᐃᓯᒪᔪᑦ ᓇᓗᓇᐃᒃᑕᖏᑦ ᓄᓇᖑᐊᓕᐊᖑᓯᒪᓕᔭ ᓂᕿᒥᔭᐅᕙᓐᓂᖏᑎᓐᓂᒃ ᐱᓪᓚᕆᐅᑎᑕᐅᔪᓂᒃ. ᐆᑐᑎᒥᐅᓪᓗᒥᑦ ᒪᑯᐊ ᐃᓚᐅᑎᑕᐅᔪᑦ ᐱᓪᓚᕆᐅᑎᑕᐅᕙᓪᓗᑎᒃ ᖃᐅᓪᓗᑐᑦ ᕿᓇᓗᒐᐃᑦ, ᕌᐃᕙᐅᔭᕐᓇᓯᐊᕐᐸᑐᑦ, ᐊᓪᓚ ᑎᕆᐊᕐᓂᐊᕐᕕᐅᕙᑐᑦ.

ᑐᓴᕐᕕᐅᔭᕕᓃᑦ

ᑐᓴᕐᕕᐅᔭᕕᓃᑦ ᐅᓂᒃᑳᖅᑕᐅᔪᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐊᕙᓗᓯᒪᔭᐅᓪᓗᑎᒃ ᐅᓂᒃᑳᖅᑕᐅᔪᑦ ᓯᕗᒥ ᓯᕗᐅᖏᓐᓂᒻᒧ ᐃᑉᐱᒋᔭᐅᓴᕐᕕᐅᑐᑦ.

Physical Environment & Logistics

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip -
Topographic Map -
Hydrographic Chart -
Video Tapes (reference number) -

Coastal Type Descriptions

Information on coastal types mapped on the operational maps is from several sources which are listed in the references for the Physical Environment and Countermeasures. A more detailed description of the coastal types is in Appendix A.

Estuaries and Bays includes not only estuarine environments but other environments, within coastal embayments, which have narrow entrances and limited exposure to the open coastline. Estuarine environments are commonly found at the heads of fiords and are associated with larger coastal delta complexes. They are characterized by shoals, numerous distributary channels with intertidal sand or mud flats, and low-lying backshore relief.

Barrier Beaches and Lagoons are generally low-lying coastal plain environments characterized by narrow barrier beaches and spits backed by inter-connected lagoonal systems. The coastlines are commonly associated with numerous coastal streams and deltas supplying sediments to the shore zone. The barriers associated with the low energy environments are usually in the finer sediment size range (sands and pebbles) while the higher energy environments range from sands to cobbles.

Coastal Flats are characterized by a very low-lying backshore with continuous beach, usually in the sand and pebble-size range with scattered cobbles and boulders. The backshore is dominated by numerous dissecting braided stream channels which form an irregular topography. Where these channels intersect the shoreline small, barrier beaches and spits often develop across stream mouths. Shallow intertidal flats and shoals are common along most sections. In areas of ice-dominated shorelines ice-push features are frequent.

Raised Beaches are generally a continuous beach environment with low to moderate backshore elevations. They are characterized by multiple, abandoned beach sequences inland. Substrate types are generally mixed sediments, usually combined sand, pebbles, cobbles, and scattered boulders in various degrees. These coastlines are commonly in low wave energy environments where the reworking of sediment would be restricted to open water storm events.

Platform Coasts are characterized by a complex mixture of low bedrock headlands and outcrops with alternating coarse sediment pockets beaches and nearshore tidal flats. Beach sediments are usually derived from the reworking of local glacial deposits and are predominantly poorly sorted coarse gravels. Boulders are commonly scattered across the backshore, beaches, and shallow intertidal zone. These coastlines are stable due to the anchoring effects of bedrock headlands, although the beaches themselves are subject to reworking by wave action during open water by the effect of ice-push.

Dissected Coastal Plains are characterized by a low to moderate-sloped backshore plain usually fronted by a continuous beach. The backshore is commonly associated with relic glacial out-wash deposits or a mantel of glacial material over bedrock terraces. The district character of these coastlines is the numerous stream channels which run perpendicular to the shoreline and are often incised into the backshore sediments. Many of the streams end in small lobate deltas and locally

supply sediment to the shore zone.

Talus Coasts are predominantly high relief backshore cliffs mantled on the seaward face with talus deposits forming a steep ramp of coarse rock debris, and fronted by a narrow to moderate coarse sediment beach. They are generally an erosional shoreline; however, they are common in areas of low shore zone energy.

Cliff Coasts are steep rock cliffs with little to no sediment at their base and are occasionally mantled by talus slopes and/or narrow fringing beaches. Beaches are intermittent along the coastline and are tidal in nature, consisting of cobble, boulder, and rubble material. This is generally an erosional coastline with wave and/or ice action active at the base of cliffs and talus slopes.

Glaciers are valley glaciers, mostly from the ice sheets on Devon Island and Bylot Island.

Anchorages

Anchorages described in the Sailing Directions for Arctic Canada (2, 3) are noted.

Potential Safe Havens

Potential safe havens for ship lightering or stabilizing were identified for each operational map based on the following criteria:

1. the sensitivity ranking of the area is low or moderate,
2. the charted waters indicate that deep draft vessels would have access to the site, and
3. the bay or inlet provides secure shelter from weather and seas to facilitate containment of escaping oil.

Identification of potential safe havens is limited by the lack of charted waters nearshore throughout most of the study area. Safe havens are also discussed specifically for each operational map.

Shore Access

Arrows denote the locations of shallow draft barge access for direct cargo transfers to and from a beach or shoreline area. Shore access is limited by the open water season. Shore access was evaluated from the Sailing Directions for Arctic Canada (2, 3), the hydrographic charts (4), and the topographic maps (7).

Airstrips

Twin Otter Symbol indicates runways less than 800 m (2,600 ft) or abandoned or emergency strips suitable for light aircraft or STOL aircraft in the 6,000 kg weight category and up (Twin Otter, Dash 7, Buffalo). Surface conditions may vary from tundra to sand or gravel. Any symbol marked Aband(oned) should be considered suitable only for Twin Otter aircraft on high flotation tires until further inspected. Air access through most of the region is limited to STOL aircraft or helicopters.

British Aerospace 748 or Fokker F-27 Symbol indicates runways with a minimum length of 1,100 m (3,600 ft). Suitable airstrips are located at Polaris on Little Cornwallis Island (Cominco) and Pond Inlet.

Lockheed Hercules (CC130) Symbol indicates runways in excess of 1,500 m (5,000 ft) with gravel surfaces able to accommodate a heavy lift freight aircraft (Hercules, Electra, B737). Suitable airstrips are located at Drake Point and Rea Point on Melville Island (Panarctic Oil), Nanisivik on Brodeur Peninsula (services Arctic Bay), and Resolute Bay.

Boxed Twin Otter Symbol is used to denote those sites where ice runways have been used for regular operation in the past during the winter months. Symbols are not meant to imply that these are the only sites available for ice landing. Given suitable conditions (smoothness, snow, ice thickness) there is no physical limit on the size of aircraft that can be landed throughout the nearshore area within the landfast ice zone. In areas of rougher ice, operations are usually limited to Twin Otters on skis or large tire/ski combination undercarriages. Water landings during the open water season are at the discretion of the pilot and are not marked on the maps.

Inlet Width for Booming

Inlet widths were measured from the hydrographic charts (4) for the Lancaster Sound region.

Temporary Stockpile Location

Disposal sites are not identified as there is insufficient published data to make an informed selection without field surveys of the region. Alternatives to long-term land disposal within the region include the trans-shipment of collected oily debris from temporary stockpiles to disposal sites in the south, or incineration on site. Temporary stockpile locations are identified on the maps based on shore access

and coastal type information. In the event of a spill, stockpiling is subject to local knowledge. The locations should also be checked for conflicts with archaeological sites.

Topographic Maps

Current topographic maps at 1:250,000 are available from Energy, Mines and Resources Canada (7) for the Lancaster Sound region.

Hydrographic Charts

Current hydrographic charts are available from the Canadian Hydrographic Service (4) for the Lancaster Sound region. The maps range in scale from 1:500,000 to 1:25,000; however, most of the region is mapped at 1:500,000.

Video Tapes

Tape numbers refer to a series of video tapes. Four sets of video tapes, covering sections of the study area, are available from Amoco Canada Petroleum Company Ltd. (6, 11) and the Atlantic Geoscience Centre (1, 10).

Access and Countermeasures

Access and countermeasures information are discussed specifically for each operational map.

References

References are indicated by numbers in brackets in the text for references relating to Physical Environment and Countermeasures.

Shoreline and Offshore Sensitivity

Legend

Shoreline Sensitivity *

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
15	Cape Liddon	103.50
16	Beechey Island	102.50
17	Wellington Channel	73.50
18	Cape Hotham	71.80
19	Cape Dungeness	116.30

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Highly Important R

Walrus Wa

Polar Bear PB

Walrus Haul-out Site Wa

Fulmer Fu

Gull Gu

Alcid Al

Sea Duck SD

Fulmer Colony Fu

Sensitivity

Appendix A provides the background information and detailed rankings necessary to interpret the sensitivity values for each area. The relative sensitivity rankings (Extreme, High, Moderate, Low) are shown on the maps.

The Lancaster Sound region is divided into 108 shoreline sensitivity areas which are shown on the operational maps. Each shoreline area extends approximately 1 km offshore and extends backshore to include the maximum tidal range. Shoreline sensitivity values apply only from May to October, when oil can be exposed along the shore or washed up along the shoreline. Summary Map 3 highlights the Extreme and High shoreline sensitivity areas.

Offshore sensitivity is presented on the regional maps by season. There are 12 offshore areas for early May to early August, 19 areas for early August to early October, 7 areas for early October to late December, and 11 areas for January to early May. The boundaries of the offshore areas are based on the average locations of distinct seasonal boundaries between ice and open water zones. In the event of a spill, the actual offshore sensitivity boundaries may differ depending on the ice conditions at the time.

Offshore sensitivity rankings for the period from May to October are ranked relative to shoreline sensitivity, while offshore sensitivity rankings for the period October to May are ranked independently from shoreline sensitivity.

Seasons

Shoreline Sensitivity (early May to early October) corresponds to the maximum time when oil already on the shore could be exposed as the snow cover melts. Oil spilled in ice following freeze-up will not reach the shore until ice break-up starting in late June or July. The period that oil may be exposed on the shore varies considerably from east to west. The variability in ice break-up dates is shown in Summary Map 6.

Offshore Sensitivity (early May to early October) corresponds to the duration of significant open water offshore. Summary Map 7 shows the variability in the open water season from east to west in the Lancaster Sound region. Offshore sensitivity between May and October is divided into two periods (early May to early August and early August to early October) to reflect the regional ice break-up patterns. Ice in Lancaster Sound and eastern Barrow Strait clears by July and break-up in the inlets occurs by the end of July or early August. West of Resolute Bay, however, ice conditions are considerably more severe; break-up is delayed by about three to four weeks from that in Lancaster Sound.

Offshore Sensitivity (early October to early May) corresponds to the duration of extensive ice cover. Offshore sensitivity between October and May is divided into two periods (early October to late December and January to early May) to reflect the regional ice freeze-up patterns and recurring flaw leads that are associated with the different ice edge locations. By December, ice west of Barrow Strait has consolidated and fast ice has formed in the inlets leading off Lancaster Sound. The ice edge in Lancaster Sound establishes its position by the end of March, although many temporary ice edges may form in the meantime.

Special Site Designations

Archaeological Sites were identified from the Archaeological Survey of Canada (ASC) inventory and are shown on the operational maps. In the event of an oil spill, the ASC should be contacted for information on the contents and status of these sites.

Seasonal Hunting Camps are established for a particular season's activities for domestic resource harvesting. They are temporary camps, although the locations are used yearly.

Outpost Camps are camps with permanent structures used mainly for domestic resource-harvesting activities.

Tourist Camps are commercial camps established for tourism-related activities.

Inukshuk and Animal Symbols

Inukshuk and Animal Symbols are in black on the regional and operational maps and represent human use and biological resource elements. The symbols indicate the general area of the following occurrences: 1) significant proportions of the regional marine mammal or polar bear population, 2) significant proportions of a group of bird species, 3) large numbers of important fish species, or 4) important areas to the regional residents. The animal symbols are placed only where significant numbers of the regional population have been observed, although fewer numbers of these species may also occur in other areas.

The main migration routes for most marine mammals during the spring (June and July) and fall (September) were identified as significant habitats. Densities of marine mammals in offshore areas are typically much lower than in coastal areas and therefore seldom warrant designation as significant habitat according to the criteria. However, offshore ice edges often dictate the movements of migratory species and, in some circumstances, act as barriers resulting in impressive concentrations of marine mammals during spring migration. In extreme years, when an ice edge exists across the mouth of Lancaster Sound, the offshore area of the ice edge was identified as an especially critical habitat.

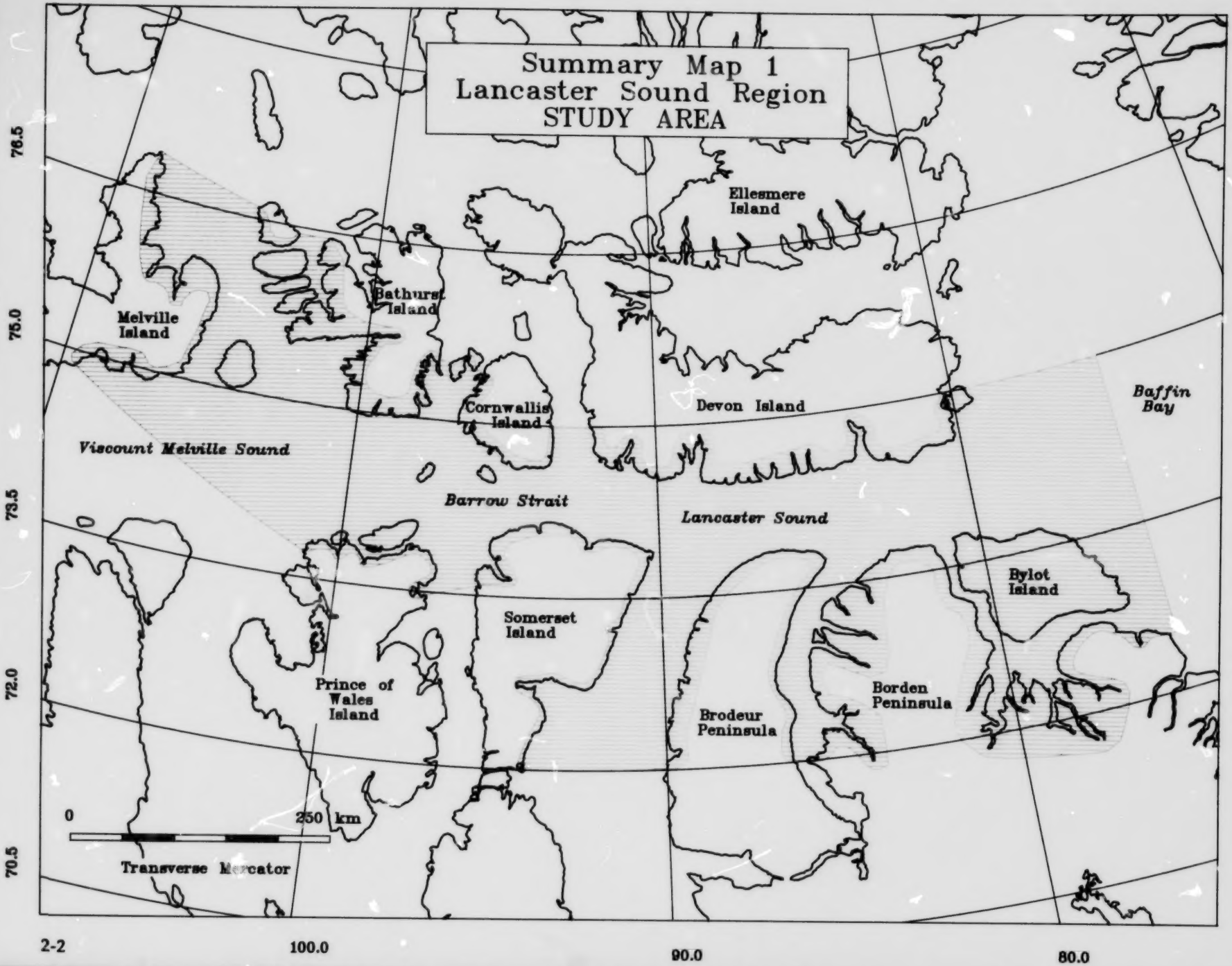
The human use symbols are placed in areas that the regional residents at the Pond Inlet Workshop identified as being important for resource harvesting or indicate a community.

Blue Animal Symbols on the regional and operational maps indicate a site-specific, significant habitat. Examples include critical estuarine habitat for beluga, terrestrial haul-out sites for walrus, and bird colonies.

References

References are indicated by numbers in brackets for references relating to Offshore and Shoreline Sensitivity.

2.0 SUMMARY INFORMATION


Summary Map 1
Lancaster Sound Region
STUDY AREA
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
Baffin Bay
Viscount Melville Sound
Barrow Strait
Lancaster Sound
Bylot Island
Somerset Island
Prince of Wales Island
Borden Peninsula
Brodeur Peninsula
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

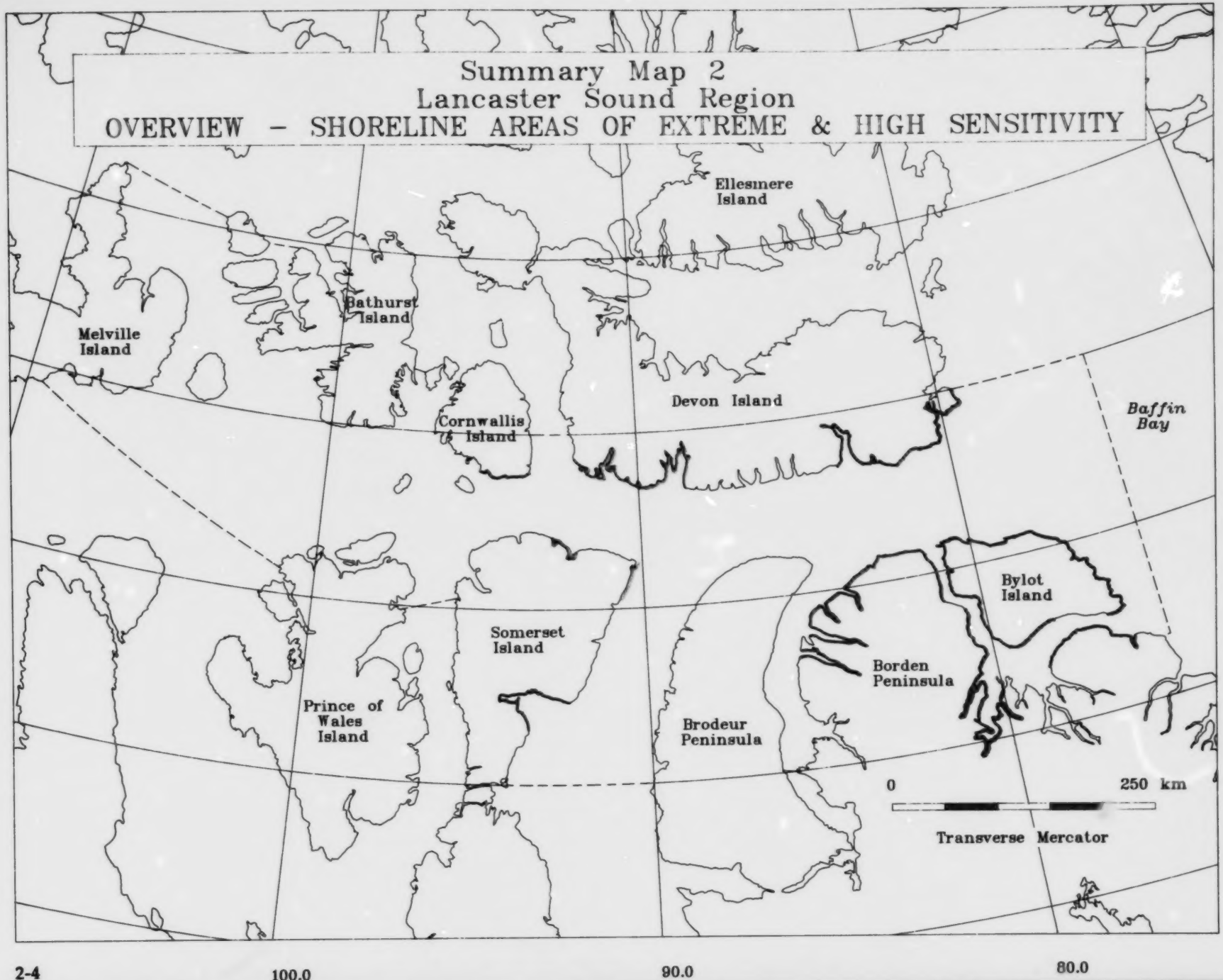
STUDY AREA

The study area includes Lancaster Sound, Barrow Strait, Navy Board Inlet, Pond Inlet, Admiralty Inlet, Prince Regent Inlet south to Bellot Strait, the eastern entrance to Viscount Melville Sound as far west as Bridport Inlet on Melville Island, and Byam Martin Channel between Bathurst and Melville Islands. The atlas covers the major areas of mining, oil production, and shipping activities in the region: lead-zinc mines at Polaris on Little Cornwallis Island and at Nanisivik, and on Cameron Island, Bent Horn, the only oil field currently in production in the High Arctic. The communities of Resolute Bay, Arctic Bay, and Pond Inlet are within the study area.

Several sites recognized as having particular importance for wildlife are also included in the study area. These special status areas are shown on Summary Map 2.

Most of the human use, biological resources, and physical environment information in the atlas is presented on the operational maps at a scale of 1:375,000. An exception is western Bathurst Island and eastern Melville Island which are presented on one map at a scale of approximately 1:1,562,500. This region, with limited biological or human use activities, is covered in less detail to allow for an expansion of the originally proposed study area to include Creswell Bay and Fitzgerald Bay in Prince Regent Inlet. Creswell Bay is considered important for birds, marine mammals, and human use.

Summary Map 1 - *Lancaster Sound Region*


Summary Map 2
Lancaster Sound Region
OVERVIEW - SHORELINE AREAS OF EXTREME & HIGH SENSITIVITY
Ellesmere Island
Bathurst Island
Melville Island
Devon Island
Cornwallis Island
Baffin Bay
Bylot Island
Somerset Island
Borden Peninsula
Prince of Wales Island
Brodeur Peninsula
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

AREAS OF EXTREME & HIGH SENSITIVITY

Legend

*Shoreline Sensitivity**

Extreme Sensitivity Ranking > 120

High Sensitivity Ranking 100-120

* See Appendix A

This map presents a summary of the shoreline areas with extreme and high sensitivity to oil spills for the period from early May to early October. The rankings are based on available data and the environmental sensitivity ranking system described in Appendix A. Offshore sensitivity rankings are shown on Regional Maps 2 to 5. Offshore sensitivity for early May to early October is ranked relative to shoreline sensitivity, while offshore sensitivity for early October to early May (the winter period) is ranked independently.

Depending on actual environmental conditions at the time of a spill, other areas may be more or less sensitive than those shown here. Users should refer to the detailed information regarding the human use, biological, and physical environmental elements that contribute to the sensitivity of all areas before deciding on a response plan. This information is provided on the operational and regional maps and accompanying text. Appendix A contains a list of all the elements for each sensitivity area, the sensitivity ranking calculations, and an explanation of the sensitivity ranking system.

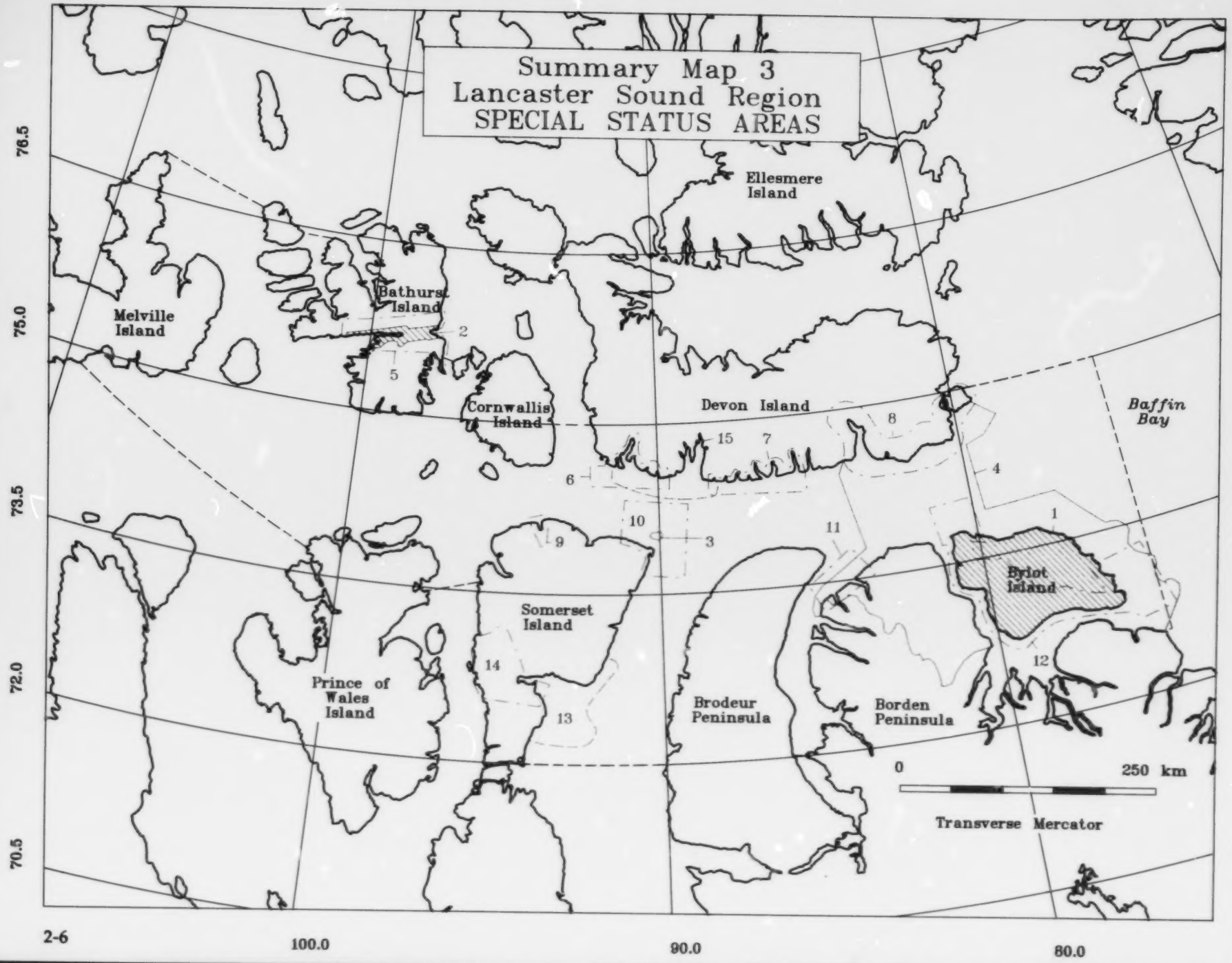
The fourteen shoreline areas ranked as extreme sensitivity are as follows:

Area 2	Bethune Inlet	Map 1
Area 3	Cape Sherard	Map 1
Area 5	Dundas Harbour	Map 2
Area 6	Croker Bay	Map 2
Area 20	Resolute Bay	Map 6
Area 58	Creswell Bay	Map 16
Area 59	Inner Creswell Bay	Map 16
Area 60	Cape Garry	Map 16
Area 93	Pond Inlet	Map 31
Area 101	Tay Bay	Map 27
Area 104	Cape Liverpool	Map 33
Area 105	Cape Fanshawe	Map 33
Area 106	Cape Walter Bathurst	Map 32
Area 107	Cape Graham Moore	Map 32

Summary Map 2 - *Lancaster Sound Region*

The twenty-eight shoreline areas ranked as high sensitivity are as follows:

Area 1	Philpots Island	Map 1
Area 4	Cape Warrender	Map 1
Area 12	Maxwell Bay	Map 4
Area 13	Cape Hurd	Map 4
Area 14	Radstock Bay	Map 4
Area 15	Cape Ricketts	Map 5
Area 16	Beechey Island	Map 5
Area 19	Cape Dungeness	Map 6
Area 50	Garnier Bay	Map 14
Area 54	Cape Seppings	Map 14
Area 78	Arctic Bay	Map 25
Area 80	Strathcona Sound	Map 25
Area 81	Elwin Inlet	Map 26
Area 82	Cape Joy	Map 26
Area 83	Cape Charles Yorke	Map 26
Area 84	Nunatsiaq Point	Map 27
Area 86	Low Point	Map 28
Area 87	Lavoie Point	Map 28
Area 88	Tremblay Sound	Map 29
Area 89	Milne Inlet	Map 29
Area 94	Mt. Herodier	Map 31
Area 95	Erik Harbour	Map 34
Area 96	Button Point	Map 32
Area 98	Southwest Bylot Island	Map 28
Area 99	Dufour Point	Map 28
Area 100	Canada Point	Map 27
Area 102	Cape Hay	Map 27
Area 103	Maud Glacier	Map 33


Summary Map 3
Lancaster Sound Region
SPECIAL STATUS AREAS
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
Baffin Bay
Byot Island
Somerset Island
Prince of Wales Island
Brodeur Peninsula
Borden Peninsula
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

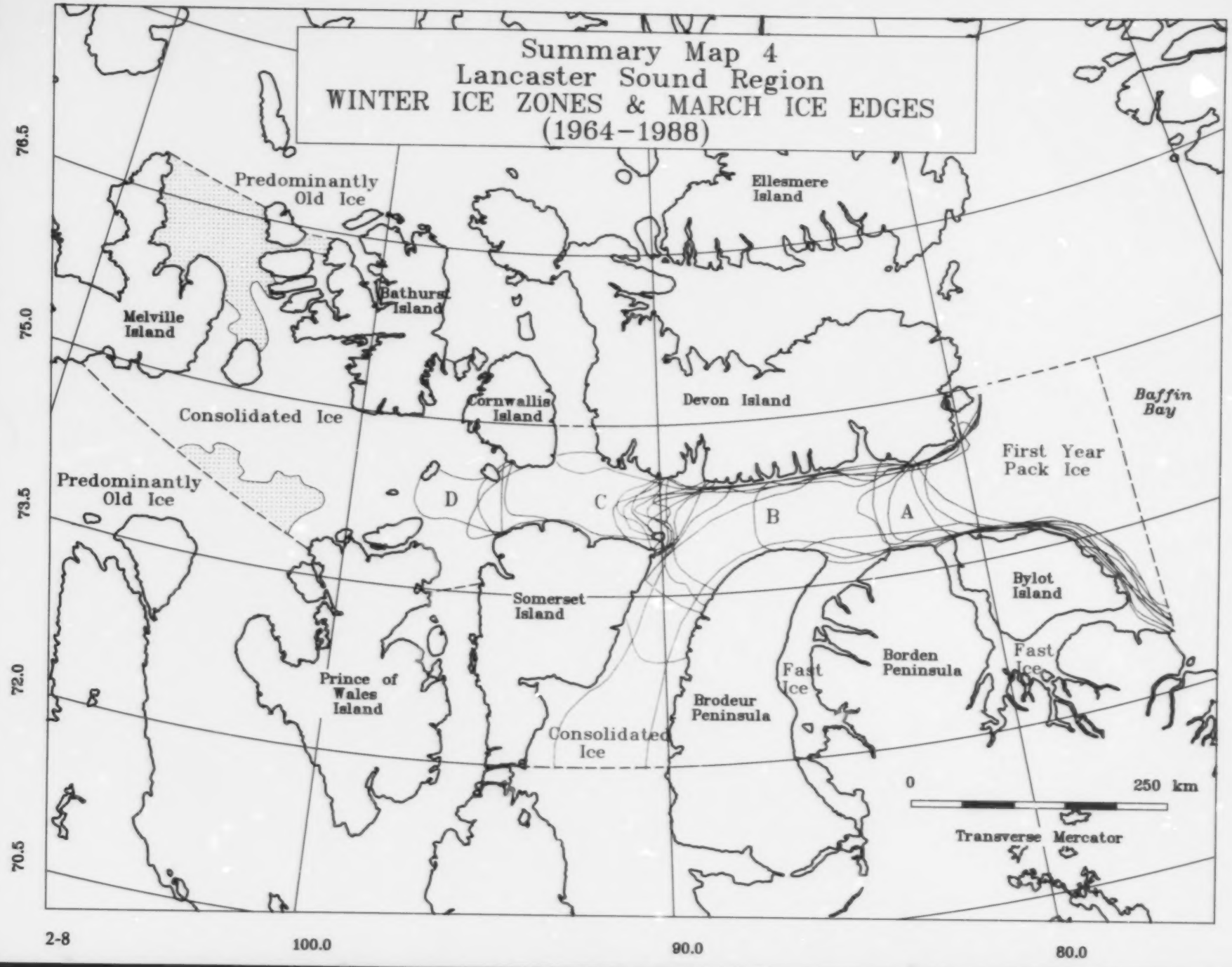
SPECIAL STATUS AREAS

Legend

- Bird Sanctuary and National Wildlife Area
- Proposed Park and Sanctuary
- International Biological Program (IBP) Site
- Natural Area of Canadian Significance (NACS) and Preliminary Marine Area of Interest

Summary Map 3 - *Lancaster Sound Region*

1. Bylot Island Migratory Bird Sanctuary
2. Polar Bear Pass National Wildlife Area
3. Prince Leopold Island Proposed Migratory Bird Sanctuary
4. Proposed North Baffin/Lancaster Sound National Park and National Marine Park
5. Bathurst Island, Bracebridge, Goodsir Inlets IBP Site
6. Devon Island, Cape Liddon IBP Site
7. Hobhouse Inlet IBP Site
8. Lancaster Sound Marine Area IBP Site
9. Somerset Island, Cunningham Inlet IBP Site
10. Prince Leopold Island and adjacent Cape Clarence IBP Site
11. Baffin Island IBP Site
12. Bylot Island IBP Site
13. Creswell Bay Preliminary Marine Area of Interest
14. Stanwell-Fletcher Lake IBP Site
15. Radstock Bay/Maxwell Bay Preliminary Marine Area of Interest


Summary Map 4
Lancaster Sound Region
WINTER ICE ZONES & MARCH ICE EDGES
(1964–1988)
Predominantly Old Ice
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
Baffin Bay
Consolidated Ice
First Year Pack Ice
Predominantly Old Ice
D
C
B
A
Bylot Island
Somerset Island
Borden Peninsula
Fast Ice
Fast Ice
Prince of Wales Island
Brodeur Peninsula
Consolidated Ice
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

WINTER ICE ZONES & MARCH ICE EDGES

Legend

Median Winter Old Ice Concentration greater than 5/10 between January and March from 1980 to 1988.

A: 24% Bylot Island Ice Edge. Ice edges formed at Cape Sherard favour Bylot Island as a southern attachment point (see Figure 2) while ice edges starting at Cape Warrender favour Borden Peninsula. The ice edge stabilized within this envelope during 6 out of 25 winters (24%).

B: 44% Brodeur Peninsula Ice Edge. The edge of the stable landfast ice reaches from Powell Inlet on Devon Island across to Brodeur Peninsula. The ice edge forms here infrequently.

C: 52% Prince Leopold Island Ice Edge. The ice edge attaches to Devon Island in the vicinity of Maxwell Bay and bridges across Prince Leopold Island to the eastern corner of Somerset Island (see Figure 3). The ice edge stabilized within this envelope during 13 out of 25 winters (52%).

D: 20% Griffith Island Ice Edge. In 5 winters out of 25 (20%) the ice edge remained in Barrow Strait, usually reaching from Cornwallis Island to Griffith Island and then to the western corner of Somerset Island (see Figure 4). During two of these winters it stabilized even further west, reaching from Griffith Island west to Lowther Island.

References: 3,19,20,21,22,24

The major feature of the ice regime in the Lancaster Sound region is the location of the ice edge or bridge. Each winter a stable landfast ice edge forms across Lancaster Sound or Barrow Strait inside one of the four envelopes shown. The establishment of the ice edge is dependent on thickness and compactness of the ice, meteorological forces, and currents (19). The ice west of the edge is relatively stable and increases in thickness all winter with occasional narrow leads occurring. East of the ice edge, new ice is continually being formed and pushed east out of the Sound and into Baffin Bay by the prevailing winds and currents at about 7 to 10 km/day (refer to Summary Map 5).

Summary Map 4 - *Lancaster Sound Region*

Mammals and birds tend to congregate at the ice edge in early summer before the ice clears (refer to Regional Maps 5 East and 5 West).

During the winter the ice edge tends to move eastward until it establishes a final stable position where it remains until break-up. By December an ice edge has usually formed in Barrow Strait at Lowther Island. As winter progresses the ice edge will jump ahead to the Griffith Island position, usually by the end of January. From there it will establish a final position within either the Prince Leopold Island or Bylot Island envelopes or remain at Griffith Island. Figure 5 shows an ice edge which is moving east from Prince Leopold Island to the Bylot Island envelope.

Ice edges also form across the mouths of McDougall Sound, Wellington Channel, Prince Regent Inlet, Admiralty Inlet, and Navy Board Inlet when these waterways are east of the Lancaster Sound ice edge. Except for Prince Regent Inlet, these ice edges stabilize quickly and predictably. The ice edge in Prince Regent Inlet usually forms halfway down the Inlet in March and moves north towards Lancaster Sound in April and May. However, in 3 out of 8 winters surveyed, during which the Lancaster Sound ice edge stabilized west of the Inlet (at Prince Leopold Island or Griffith Island), an ice edge was never established across Prince Regent Inlet.

Figure 1 Probability of Ice Edge Positions

14 winters surveyed (3,19,24)

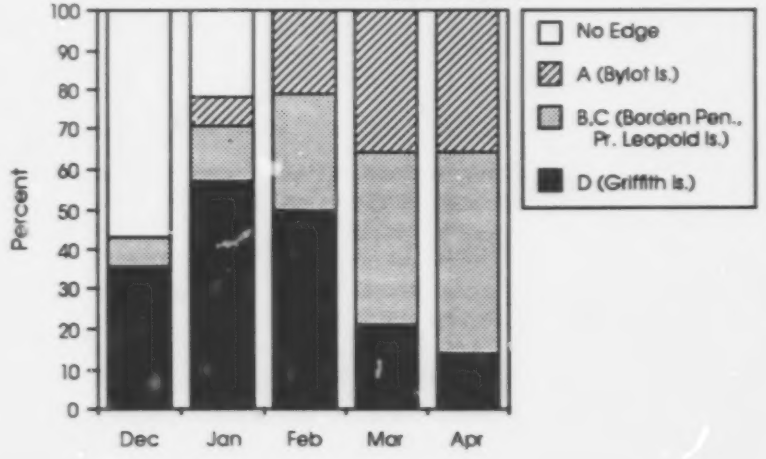


Figure 2 Ice Edge at Bylot Island (Position A)
February 8,1979 - NOAA Image

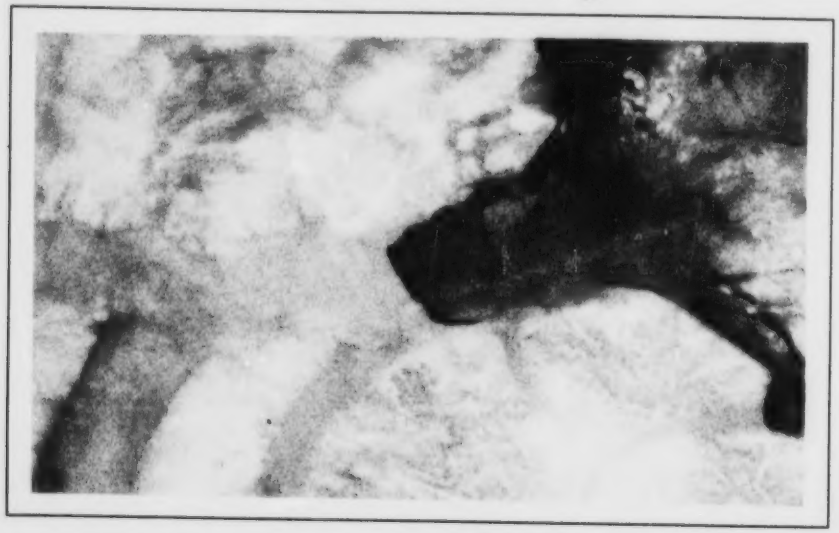


Figure 4 Ice Edge at Griffith Island (Position D)
January 21, 1982 - NOAA Image

Figure 3 Ice Edge at Prince Leopold Island (Position C)
March 13, 1981 - NOAA Image

Figure 5 Ice Edge Moving East
January 20, 1983 - NOAA Image

WINTER ICE THICKNESS

Legend	
ELS	Eastern Lancaster Sound
CLS	Central Lancaster Sound
BS	Barrow Strait
1	Ice Consolidates in Viscount Melville Sound
2	Ice Edge Forms at D (Griffith Island)
3	Ice Edge Moves to C (Prince Leopold Island)
4	Ice Edge Moves to A (Bylot Island)

Figures 6, 7, and 8 show the calculated ice thickness in the three regions (BS, CLS, ELS) for the three major ice edge positions. The thickness has been calculated from freezing degree days (4) using Zubov's formula (31) and taking into account ice drift. As the ice edge moves east to a new position, wind and current action create a zone of young ice immediately east of the edge, decreasing the ice thickness. The ice thickness does not include leads and thin ice which on average occupy 12% of the total ice cover east of the ice edge.

Figure 7 Calculated Ice Thickness for an Ice Edge at C
Ice Edge Established in February

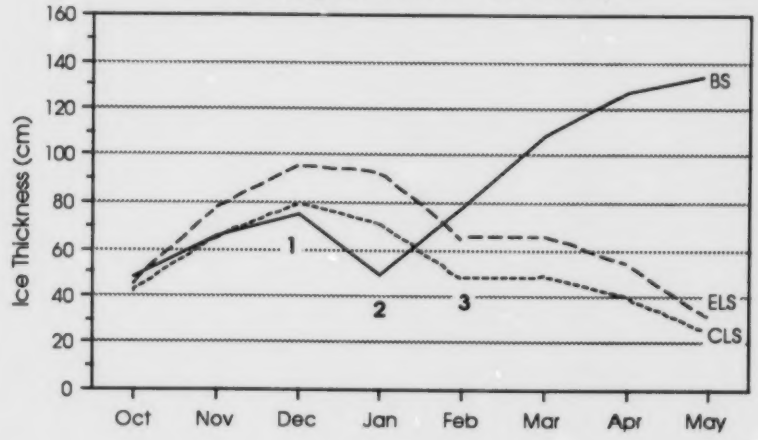


Figure 6 Calculated Ice Thickness for an Ice Edge at D
Ice Edge Established in January

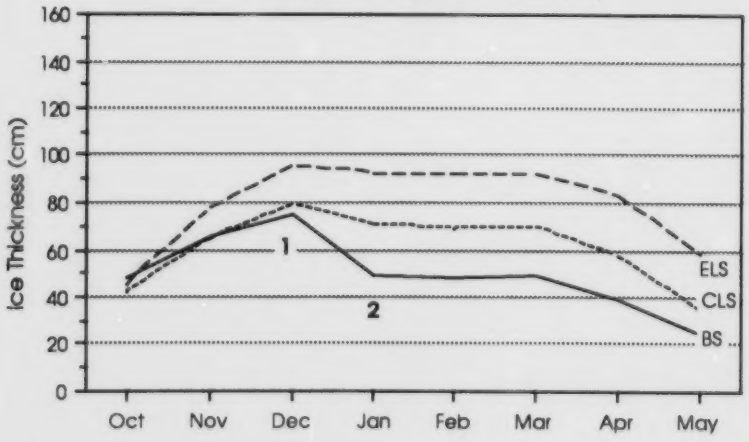
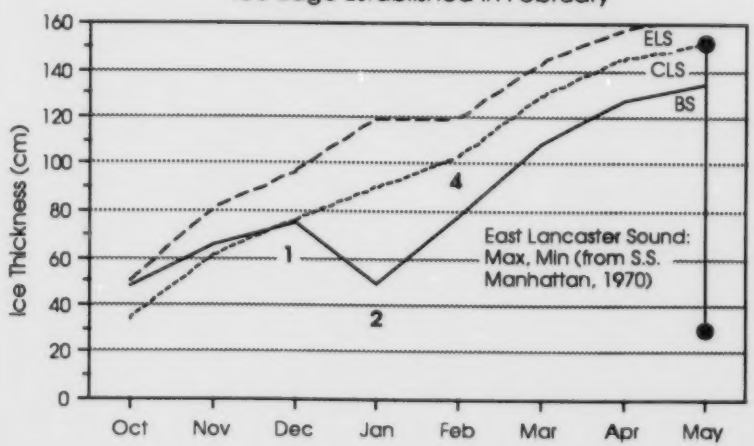
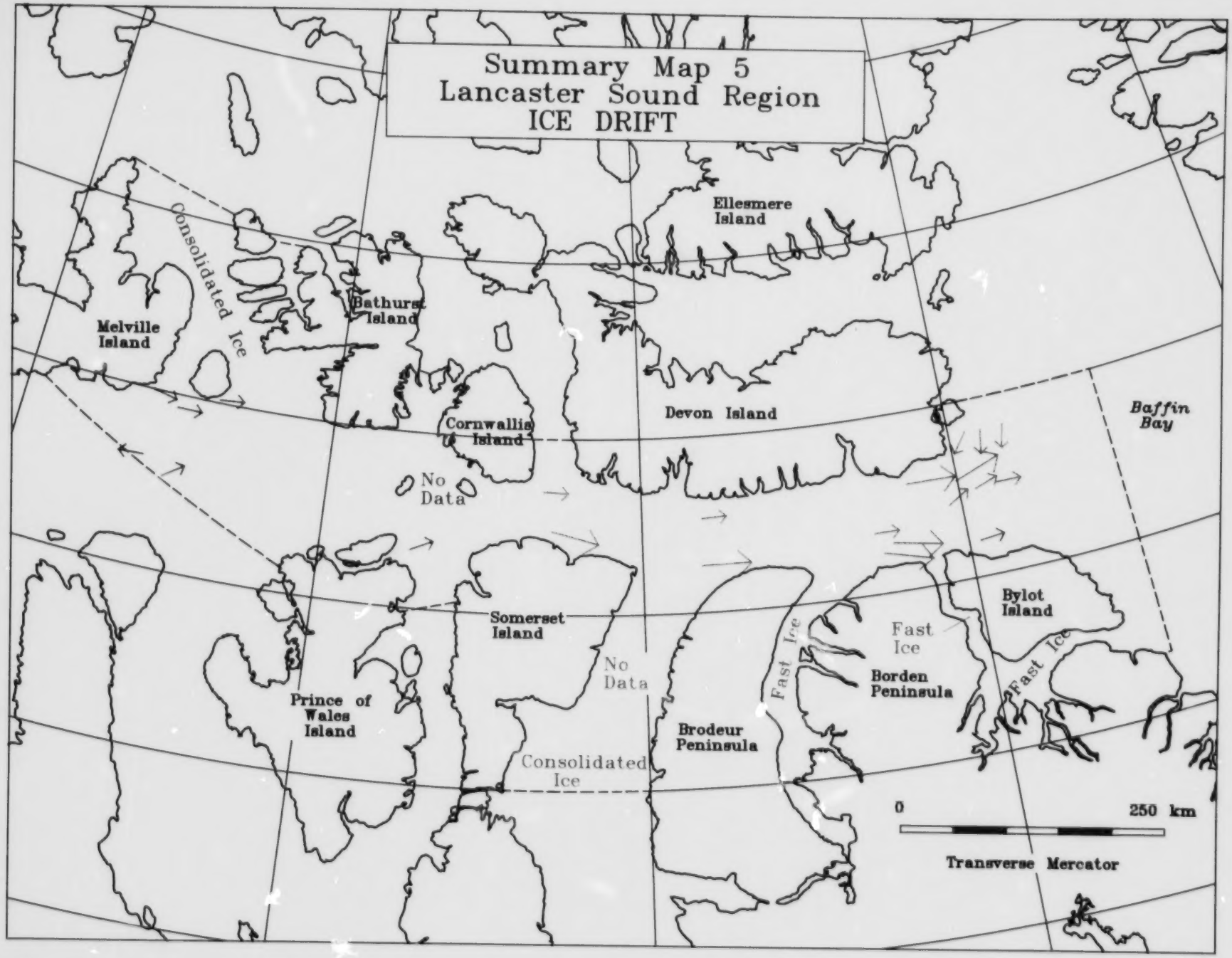


Figure 8 Calculated Ice Thickness for an Ice Edge at A
Ice Edge Established in February




Summary Map 5
Lancaster Sound Region
ICE DRIFT
Ellesmere Island
Consolidated Ice
Bathurst Island
Melville Island
Devon Island
Baffin Bay
Cornwallis Island
No Data
Somerset Island
Bylot Island
Fast Ice
Fast Ice
Fast Ice
Borden Peninsula
No Data
Prince of Wales Island
Brodeur Peninsula
Consolidated Ice
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
2-12
100.0
90.0
80.0

ICE DRIFT

Summary Map 5 - *Lancaster Sound Region*

Legend

← 4-10 km/day (4.6-11.6 cm/s)

⟵ 10-15 km/day (11.6-17.4 cm/s)

References: 24,25

Summary Map 5 shows the average winter ice drift during early winter and winter as reported by (24) and (25). The values agree with other measurements such as those reported in (17). **Once an ice edge has established itself across Lancaster Sound or Barrow Strait there is no significant motion of the ice behind the edge.**

Ice movements are a result of winds and currents acting on the ice. In general the ice in the Lancaster Sound region tends to move east towards Baffin Bay at a rate of 7-10 km/day. The ice drift rate is highest along the southern side of Barrow Strait and Lancaster Sound where extreme drift rates of 70 km in one day have been reached (24).

Ice drift rates and directions can vary considerably from those shown. The ice may remain stationary for days at a time before beginning to move again (18). In early winter the ice may tend to drift clockwise across Lancaster Sound off Brodeur Peninsula (17).

Figure 9 Landfast Ice Thickness in Barrow Strait

1004 observations at Resolute from 1955 to 1982 (5)

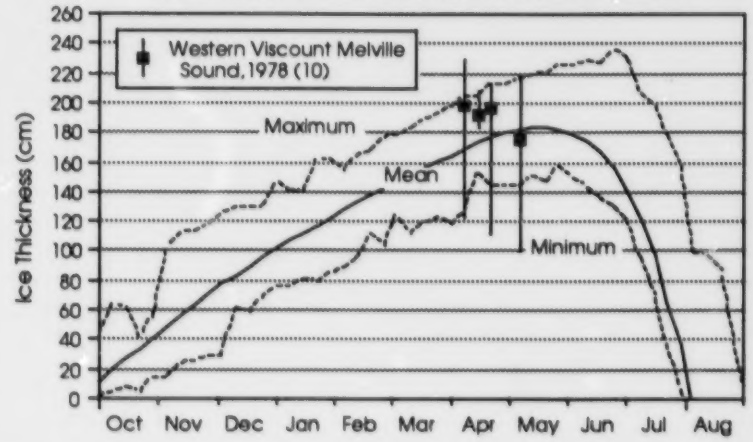
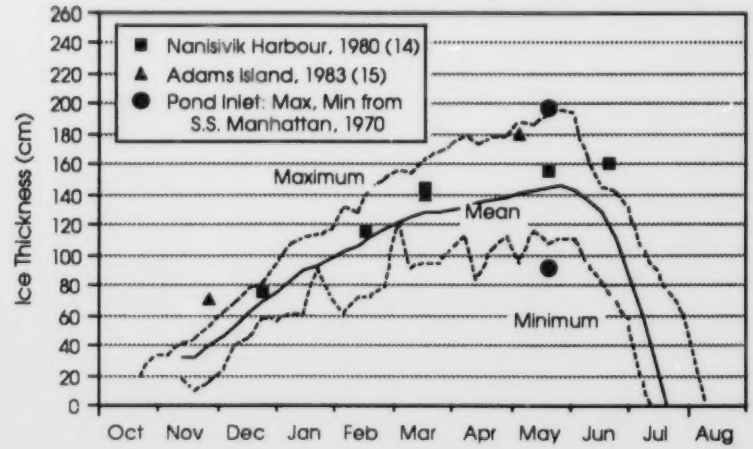
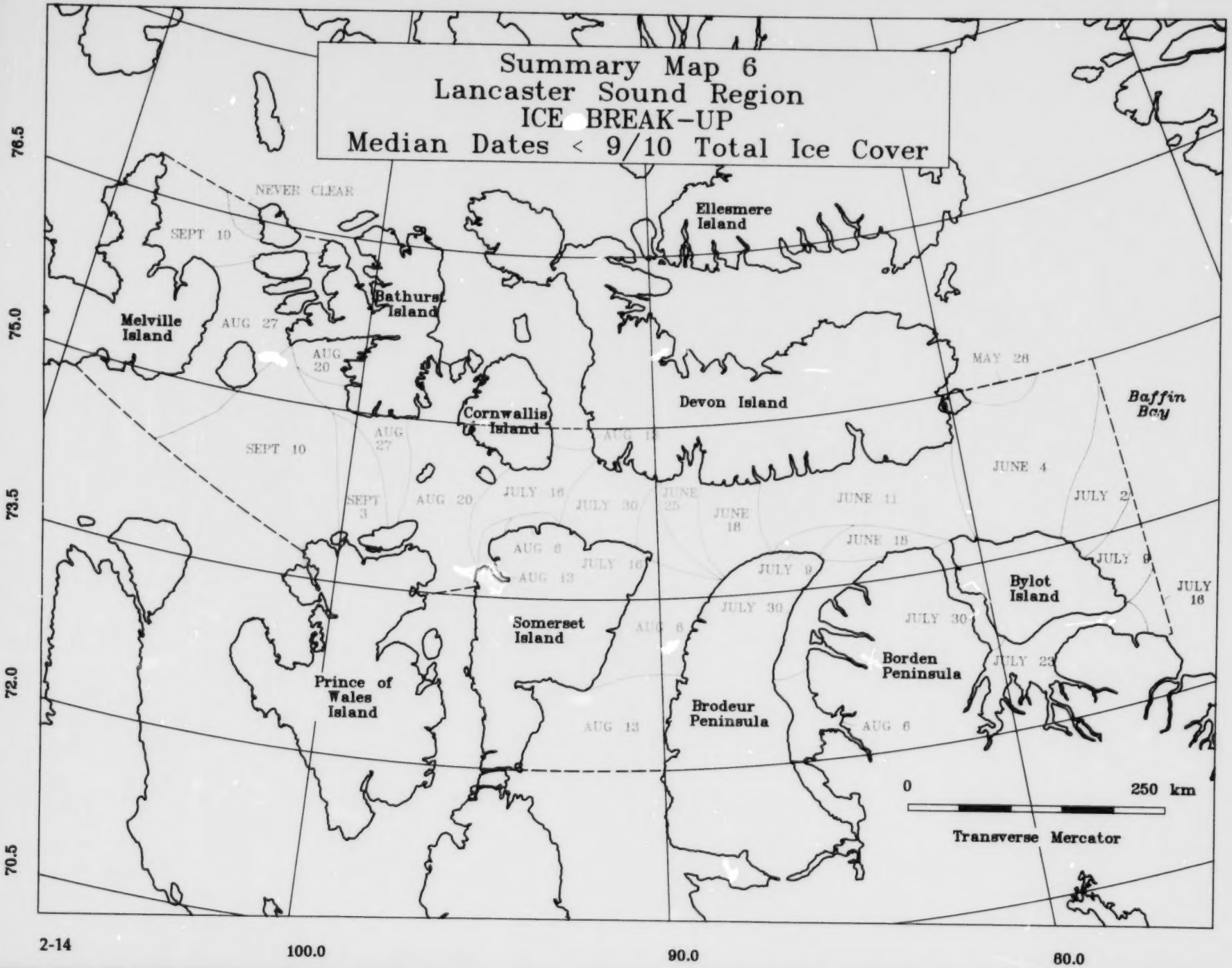


Figure 10 Landfast Ice Thickness in the Lancaster Sound Area

244 observations at Pond Inlet from 1964 to 1982 (5)




Summary Map 6
Lancaster Sound Region
ICE BREAK-UP
Median Dates < 9/10 Total Ice Cover
NEVER CLEAR
SEPT 10
Ellesmere Island
Bathurst Island
Melville Island
AUG 27
AUG 20
Devon Island
Cornwallis Island
MAY 28
Baffin Bay
SEPT 10
AUG 27
JUNE 4
SEPT 3
AUG 20
JULY 16
JULY 30
JUNE 25
JUNE 18
JUNE 11
JULY 2
AUG 6
JULY 16
AUG 13
JUNE 18
JULY 9
JULY 9
Bylot Island
JULY 16
JULY 30
JULY 30
Somerset Island
AUG 6
Borden Peninsula
JULY 23
Prince of Wales Island
Brodeur Peninsula
AUG 13
AUG 6
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

Legend

Maximum
Median
Minimum

The ice break-up dates in Lancaster Sound and adjacent waterways are dependent on the location of the winter ice edge. When the ice edge is at C or D (Prince Leopold Island or Griffith Island), then Lancaster Sound usually breaks up in early June, Prince Regent Inlet breaks up in late July, and the smaller inlets, such as Navy Board Inlet, Pond Inlet, and Admiralty Inlet, follow in late July and early August (as shown in Figure 11).

When the ice edge is established at A (Bylot Island) the complete break-up of Lancaster Sound, along with the adjoining inlets, can be delayed by two months until mid-August (Figure 13).

Ice break-up in the western channels is not greatly affected by the winter ice edge positions in Lancaster Sound (Figure 12).

Figure 12 Variability of Break-up, West Region:
for All Ice Edge Positions (2,7)

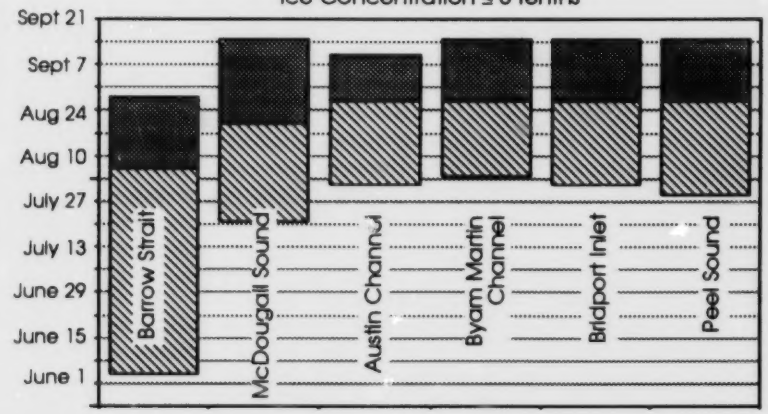


Figure 11 Variability of Break-up, East Region:
Winter Ice Edge Located at Prince Leopold Is. or Griffith Is. (1,7)

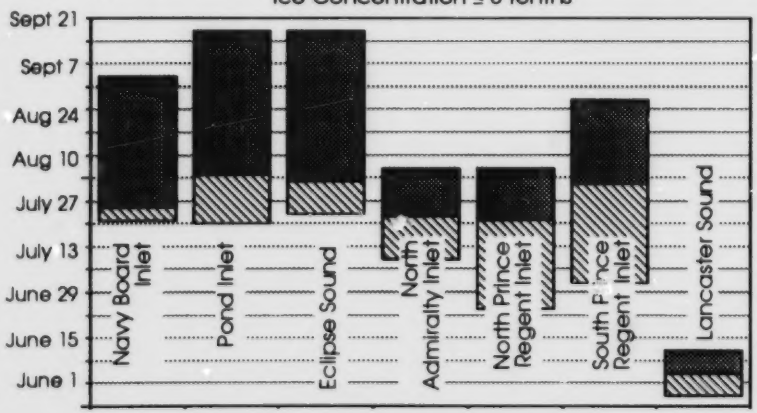
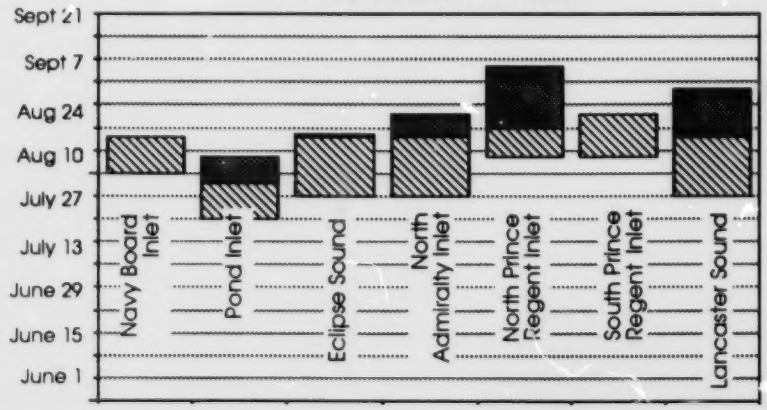
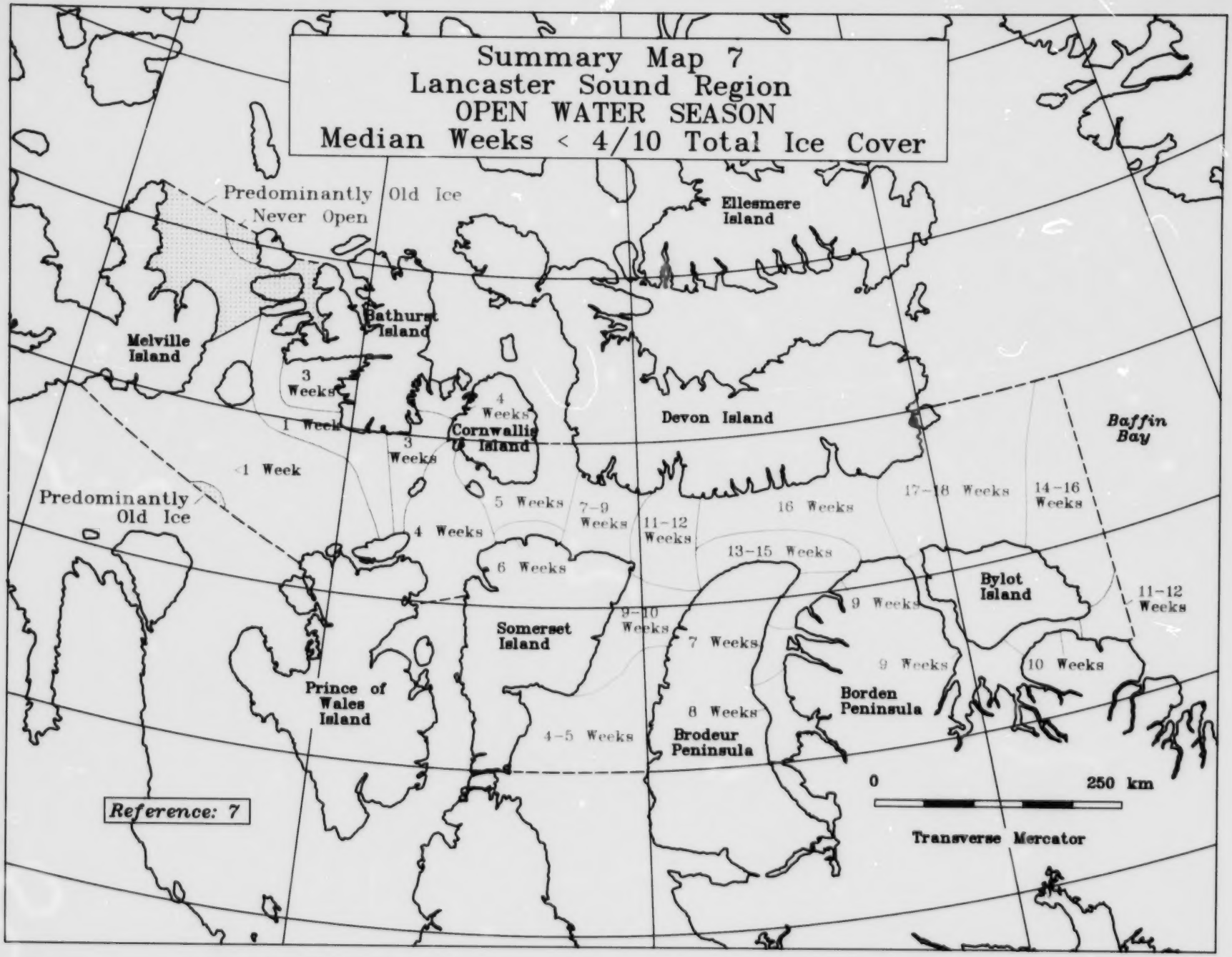
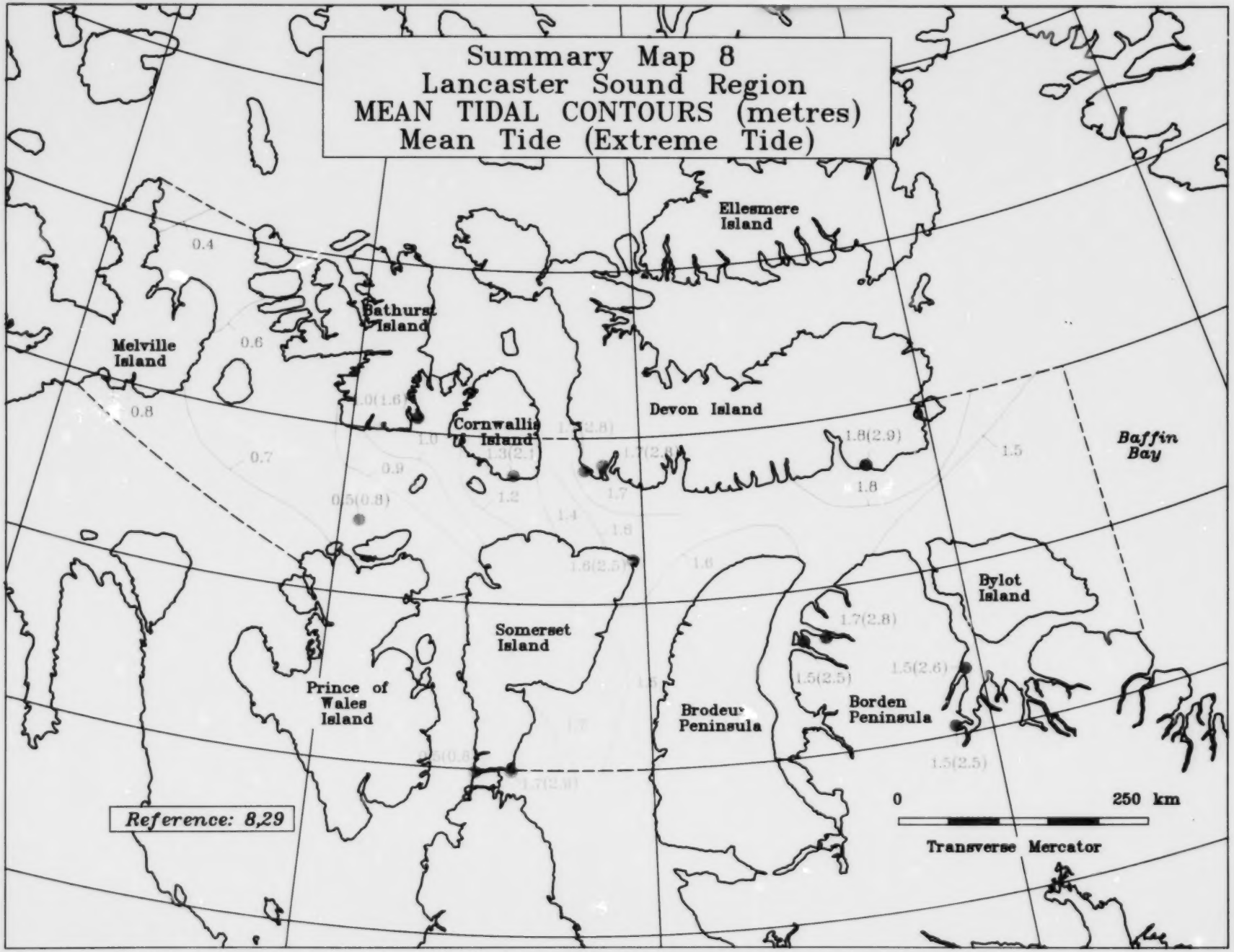
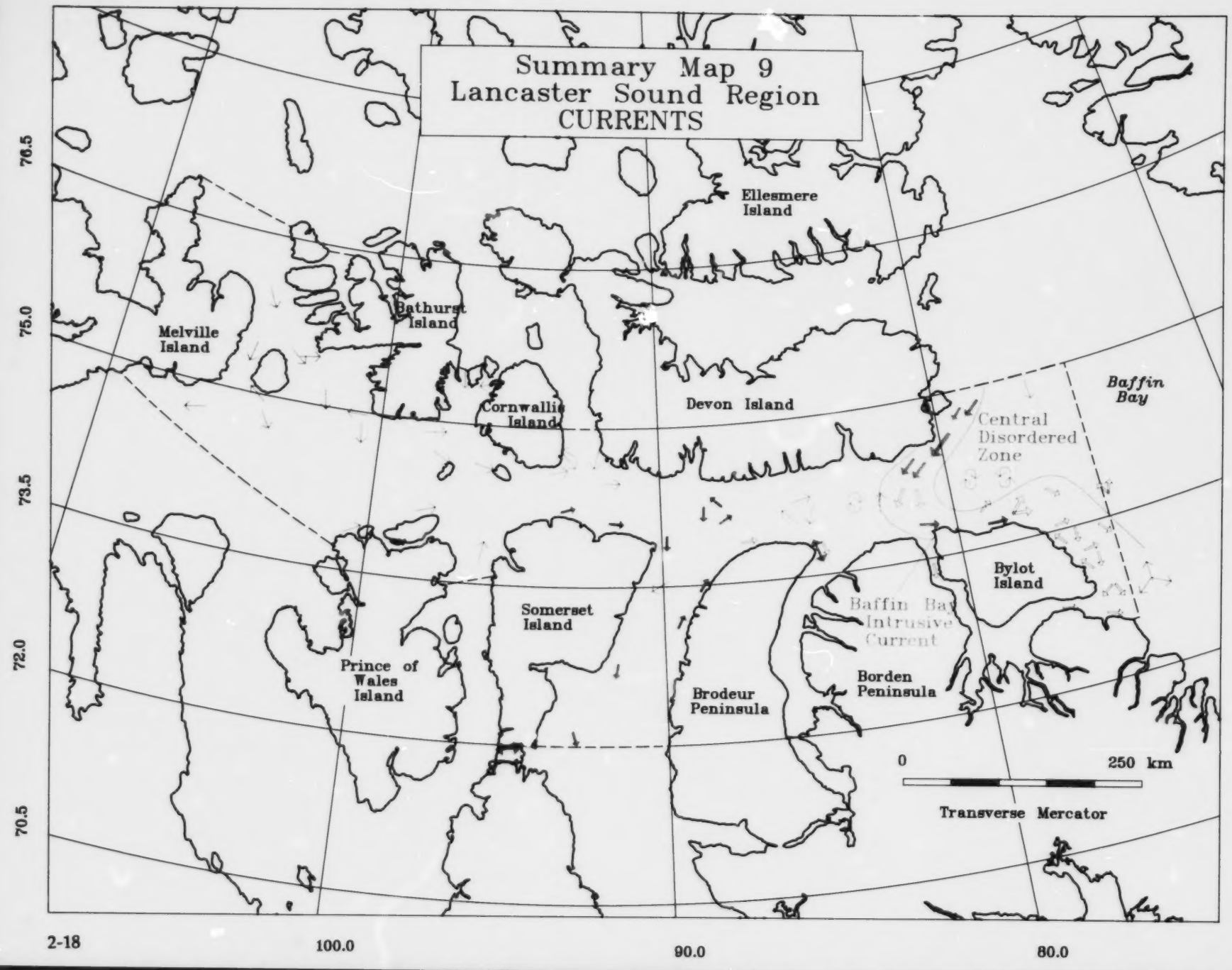


Figure 13 Variability of Break-up, East Region:
Winter Ice Edge Located at Bylot Island (1,7)




Summary Map 7
Lancaster Sound Region
OPEN WATER SEASON
Median Weeks < 4/10 Total Ice Cover
Predominantly Old Ice
Never Open
Ellesmere Island
Bathurst Island
Melville Island
3 Weeks
4 Weeks
1 Week
Cornwallis Island
Devon Island
Baffin Bay
3 Weeks
<1 Week
Predominantly Old Ice
5 Weeks
7-9 Weeks
11-12 Weeks
16 Weeks
17-18 Weeks
14-16 Weeks
4 Weeks
13-15 Weeks
6 Weeks
Bylot Island
11-12 Weeks
9 Weeks
9-10 Weeks
Somerset Island
7 Weeks
9 Weeks
10 Weeks
Prince of Wales Island
Borden Peninsula
8 Weeks
4-5 Weeks
Brodeur Peninsula
Reference: 7
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0


Summary Map 8
Lancaster Sound Region
MEAN TIDAL CONTOURS (metres)
Mean Tide (Extreme Tide)
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
Baffin Bay
Somerset Island
Prince of Wales Island
Brodeur Peninsula
Borden Peninsula
Bylot Island
0.4
0.6
0.8
0.7
0.9
1.8(2.9)
1.5
1.8
1.7(2.8)
1.5(2.5)
1.5(2.6)
1.5(2.5)
Reference: 8,29
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0


Summary Map 9
Lancaster Sound Region
CURRENTS
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
Baffin Bay
Central Disordered Zone
Bylot Island
Baffin Bay Intrusive Current
Somerset Island
Prince of Wales Island
Brodeur Peninsula
Borden Peninsula
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0

CURRENTS

Summary Map 9 - *Lancaster Sound Region*

Legend

Permanent Currents

- 1-15 cm/s
- 15-35 cm/s
- 35-65 cm/s
- 65-100 cm/s
- Strong Tidal Currents

Transient Currents

- 15-35 cm/s
- 35-65 cm/s

References: 11,12,13,29

Note: Currents shown are vector averaged

1 cm/s = 0.0194 knots

Summary Map 9 shows average current speeds, both permanent and transient (actual speeds are variable and can reach values double those shown). The upper limit for operation of oil spill containment booms is represented by currents of 35 cm/s (0.7 knots).

The vector-averaged surface current directions are relatively stable throughout the year. Surface current speeds tend to be reduced in the winter by the ice cover especially west of the ice edge. In Viscount Melville Sound the currents are highly variable in orientation.

A major feature of the currents in the Lancaster Sound region is the strong Baffin Bay intrusive current. This stream sweeps southwest around the corner of Devon Island into eastern Lancaster Sound and then either moves southeast towards Bylot Island or southwest toward Borden Peninsula before moving east along northern Bylot Island. The intrusive current can reach speeds up to 100 cm/s as it rounds Cape Sherard on Devon Island (12). Offshore of the east coast of Bylot Island, the current generally runs southeast but often meanders under the effect of other northerly currents further out in Baffin Bay (12). Large eddies occur frequently between this current and the east coast of Bylot Island. The area east of the Baffin Bay intrusive current is often referred to as the central disordered zone and is characterized by weak, random currents.

Icebergs carried into Lancaster Sound by the intrusive current penetrate up to 100 km before being carried back out by the current (18). Historical statistics show a density of approximately 1 iceberg per 80 square km in eastern Lancaster Sound (18).

A transient current runs south through Navy Board Inlet and east along the south side of Pond Inlet. The currents are transient in that at times drifter buoys have been swept into Navy Board Inlet from Lancaster Sound while on other occasions they have drifted past the Inlet mouth without being affected (12).

Large eddies result in considerable cross channel flow in central Lancaster Sound. A notable eddy occurs off of the mouth of Prince Regent Inlet.

In Prince Regent Inlet, currents tend to travel south down the west side of the Inlet and north up the east side.

Tidal currents in the Lancaster Sound region are generally weak. Exceptions are Bellot Strait where tidal currents can reach 400 cm/s (8 knots) (29), and nearshore areas of Lancaster Sound (e.g., Cape Crawford on Brodeur Peninsula tidal - 38 cm/s (12)).

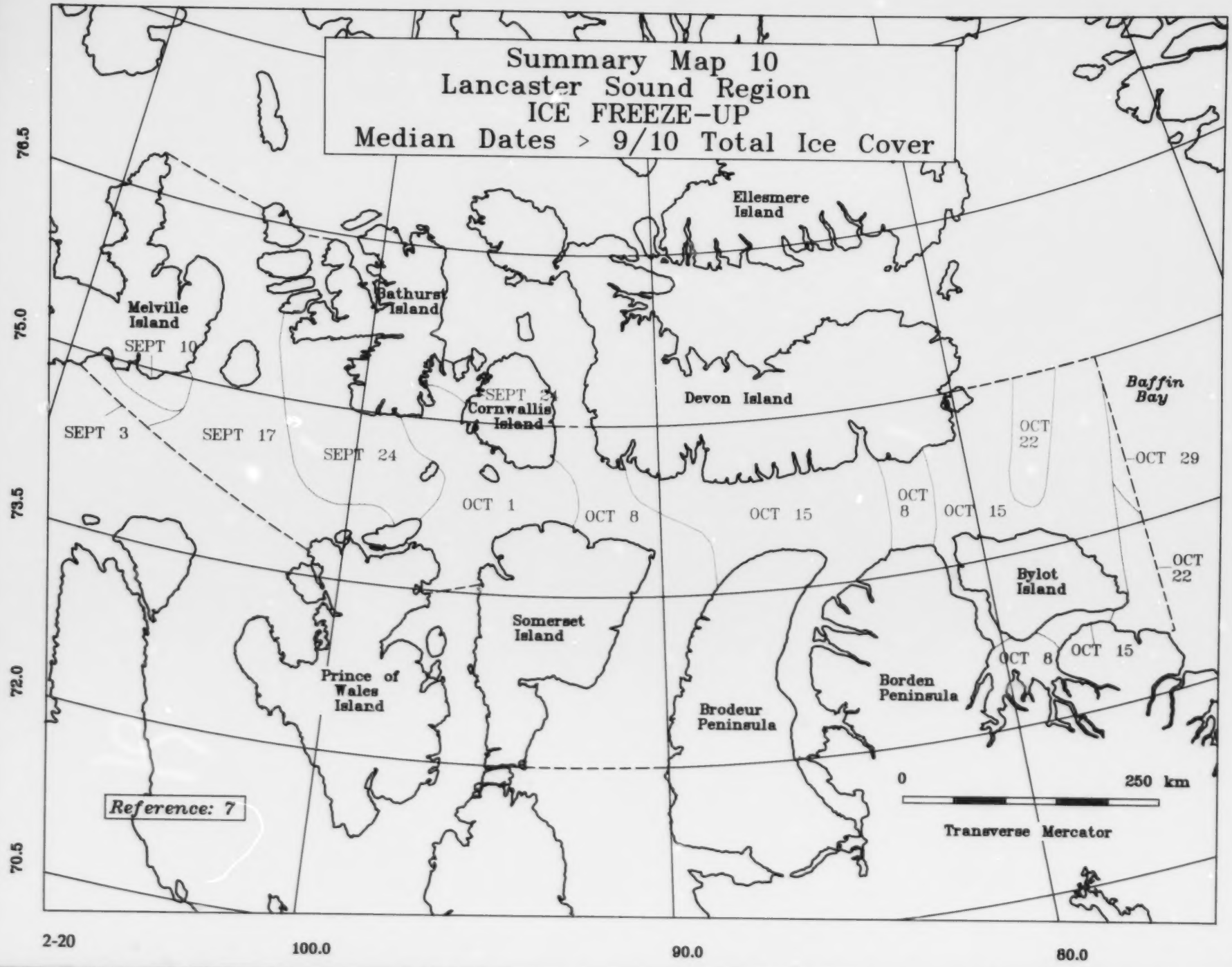
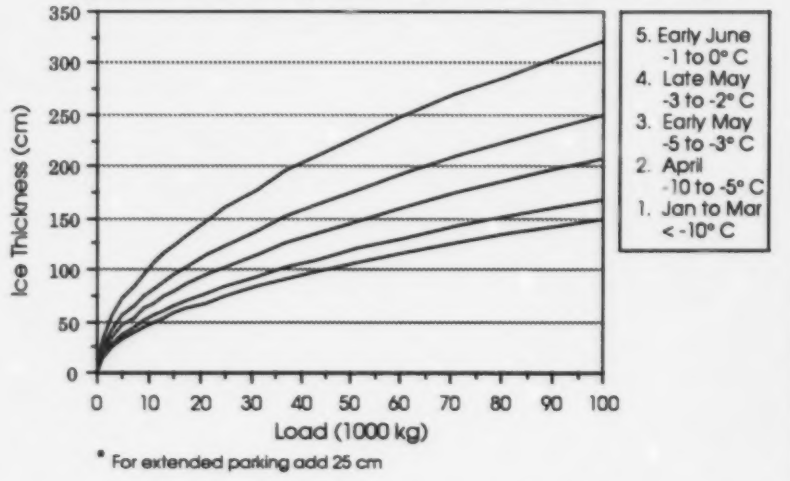

Summary Map 10
Lancaster Sound Region
ICE FREEZE-UP
Median Dates > 9/10 Total Ice Cover
Ellesmere Island
Melville Island
Bathurst Island
SEPT 10
SEPT 3
SEPT 17
SEPT 24
SEPT 2
Cornwallis Island
Devon Island
Baffin Bay
OCT 22
OCT 29
OCT 1
OCT 8
OCT 15
OCT 8
OCT 15
OCT 22
Bylot Island
Somerset Island
OCT 8
OCT 15
Prince of Wales Island
Borden Peninsula
Brodeur Peninsula
Reference: 7
0
250 km
Transverse Mercator
76.5
75.0
73.5
72.0
70.5
2-20
100.0
90.0
80.0

Table 1
Recommended Safe Ice Thickness for Over Ice Traffic

Vehicle	Gross Weight (kg)	Payload (kg)	Ice Thickness[1] (cm)	Mean Earliest Date Allowed on Ice[2] Resolute	Pond Inlet
Cat D-6 H	17,464	N/A	70	Nov 26	Dec 24
Kenworth 953A	54,885	27,215	153	Mar 12	—
Bell 212	4,990	2,265	45	Oct 29	Nov 26
DH Twin Otter	5,670	2,041	47	Oct 29	Dec 3
Boeing Chinook	23,133	12,700	101	Dec 24	Feb 5
Lockheed Hercules	70,307	23,133	163	Apr 2	—

1 Moving load with surface ice temperatures between -10°C and -5°C.
2 From landfast ice thickness (5).

Figure 14 Ice Bearing Capacity for Moving Loads* (16,30)



* For extended parking add 25 cm

Figure 15 Variability of Freeze-up (1,2,7)

Ice Concentration ≥ 9 tenths

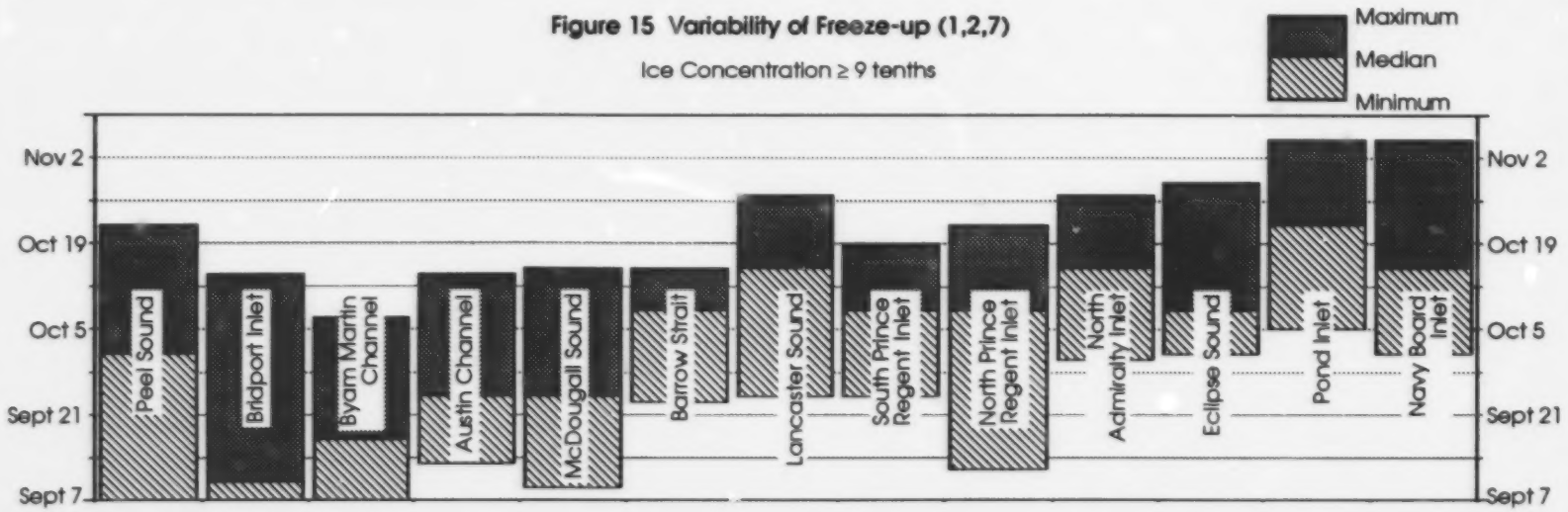


Figure 16
December 9,1975 - NOAA Image

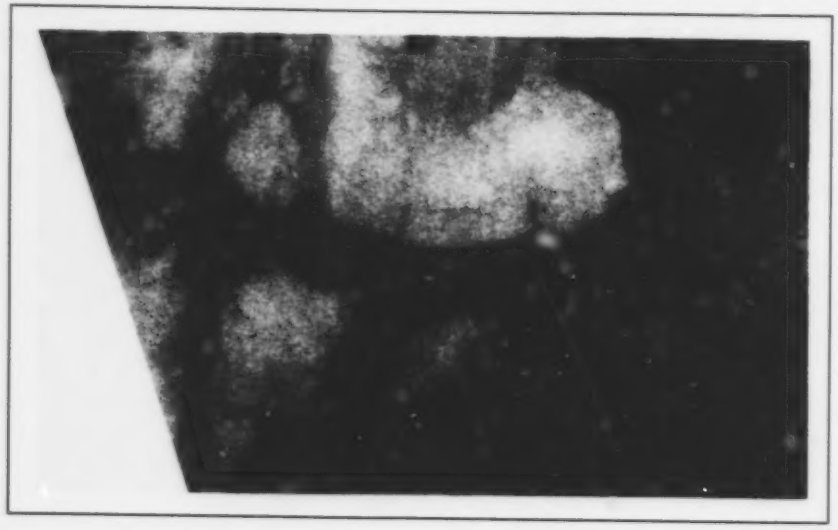


Figure 17
February 21, 1975 - NOAA Image

Figure 18
April 17, 1976 - NOAA Image

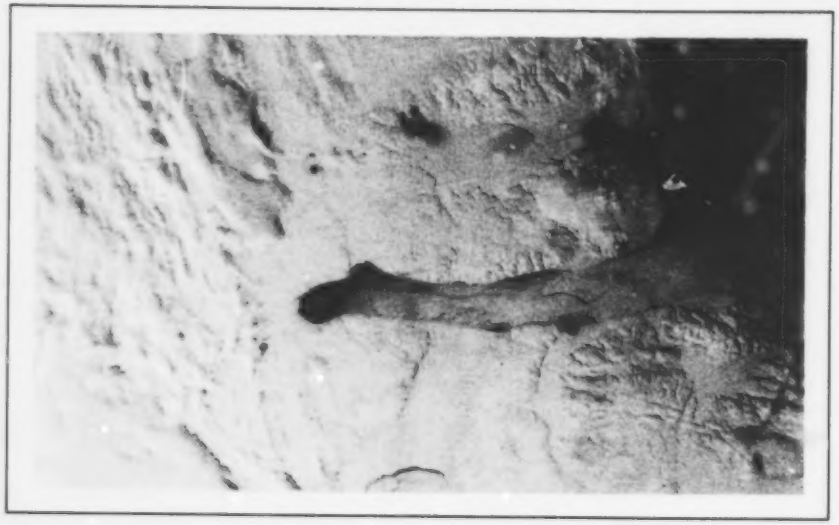


Figure 19
May 2, 1976 - NOAA Image

Figure 20
June 14,1975 - NOAA Image

Figure 21
July 27, 1975 - NOAA Image

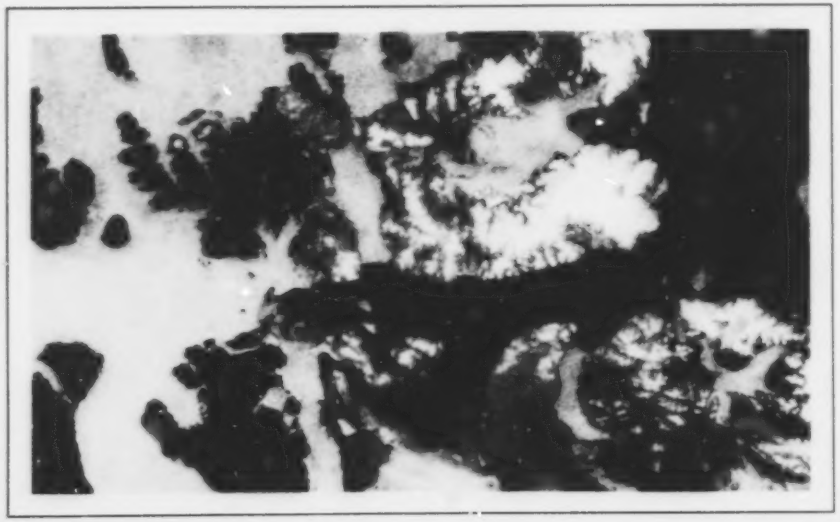
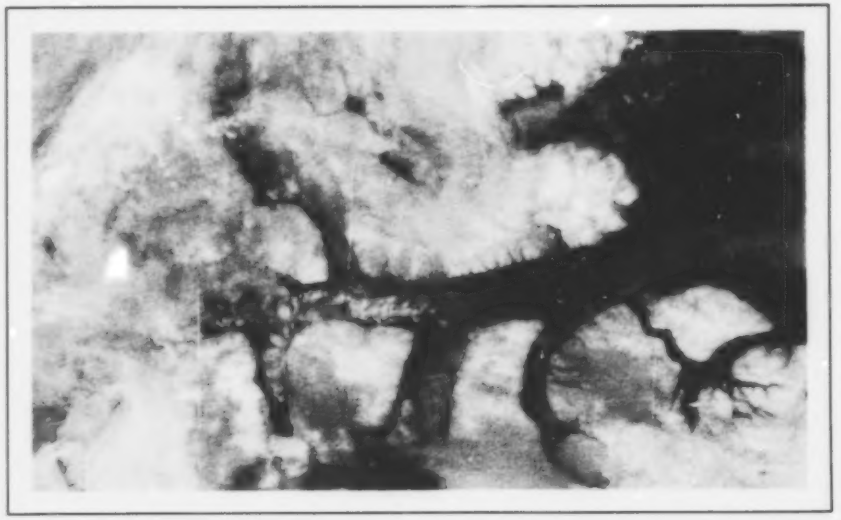


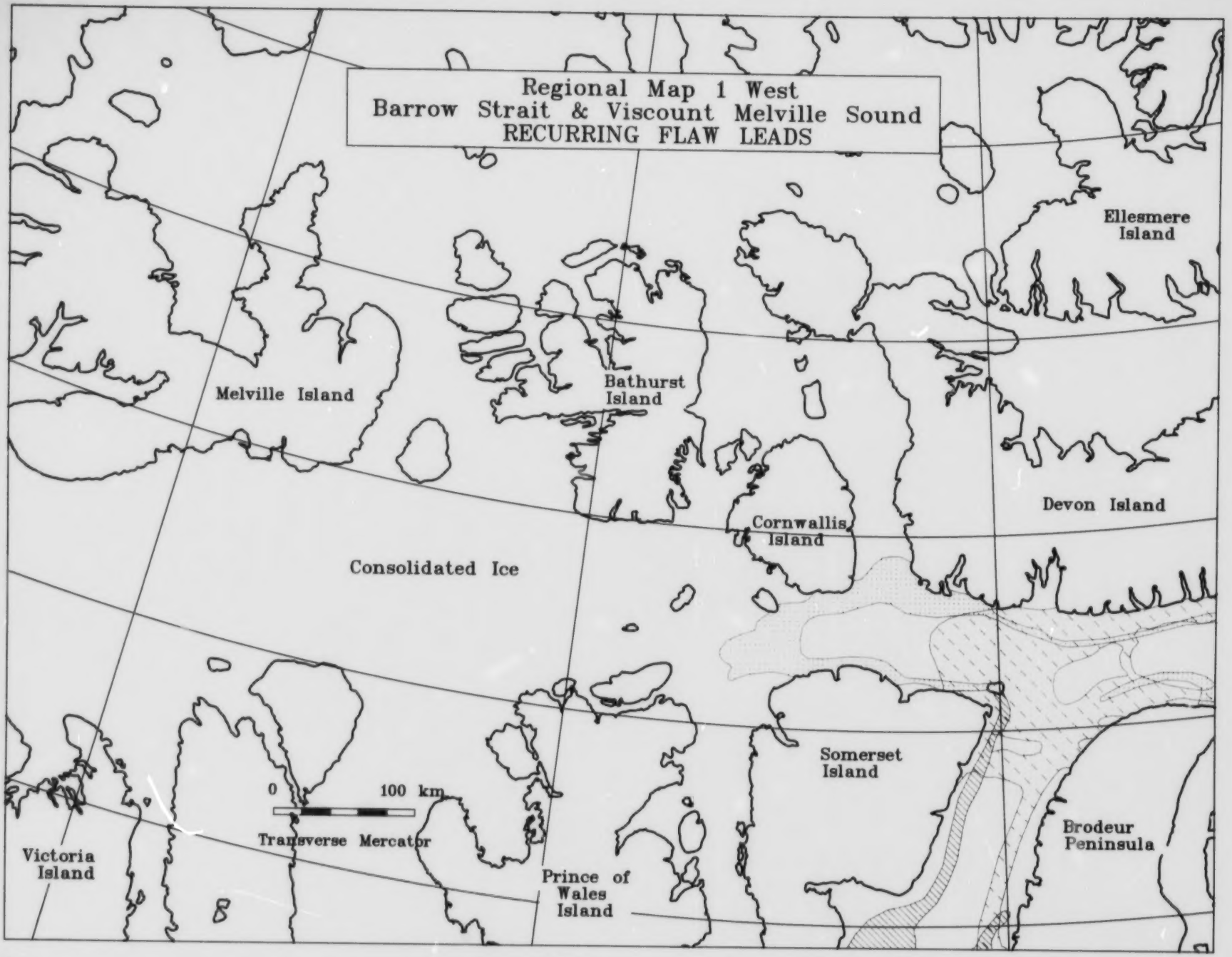
Figure 22
October 15, 1976 - NOAA Image



Figures 16-22 show the progression of freeze-up, ice edge consolidation, and break-up in 1975-76. During this winter, the ice edge stabilized at the Griffith Island location in February. Note in Figures 17-19 that the ice edge moved forward from Lowther Island to Griffith Island before stabilizing. This is typical of the ice edge behaviour.

Figures 20-21 show a typical break-up sequence with Lancaster Sound itself free of ice by June and the adjoining inlets breaking-up in July (see Figures 11-13 for the historical range of break-up dates). Figure 22 shows the start of freeze-up in October. Note the multi-year ice moving eastward through Barrow Strait into Lancaster Sound.

3.0 REGIONAL INFORMATION


Regional Map 1 West
Barrow Strait & Viscount Melville Sound
RECURRING FLAW LEADS
76.25
75.00
73.75
72.50
Ellesmere Island
Melville Island
Bathurst Island
Devon Island
Cornwallis Island
Consolidated Ice
Somerset Island
Brodeur Peninsula
Victoria Island
Prince of Wales Island
0
100 km
Transverse Mercator
100.0
90.0

RECURRING FLAW LEADS

Regional Map 1 West - *Barrow Strait & Viscount Melville Sound*

Legend

Envelope of recurring leads associated with the ice edge establishing at the eastern end of Lancaster Sound between Devon Island and Bylot Island or Borden Peninsula (Position A on Summary Map 4).

Envelope of recurring leads associated with the ice edge establishing at Prince Leopold Island (Position C on Summary Map 4).

Envelope of recurring leads associated with the ice edge establishing at Griffith Island (Position D on Summary Map 4). The east-west leads extending along the north and south coasts of Lancaster Sound can also occur when the ice edge is at Griffith Island.

Envelopes of recurring leads which are independent of the ice edge location and are associated with

- the fractured ice zone extending from Lady Ann Strait along the east coast of Devon Island around to Cape Warrender,
- the shear ice zone along the northeast and east coasts of Bylot Island, and
- the fractured ice zone in Prince Regent Inlet.

References: 3,9,19,20,21,22,24,28

Several complex lead patterns develop throughout the winter months. The leads form and reform at any time during the winter and changes occur within a few days. The lead patterns are largely controlled by the location of the ice edge, although the prevailing winds and ice motion are also influential.

A flaw lead usually develops along the east side of the ice edge. The location of the ice edge varies annually (see Summary Map 4 for typical locations of the ice edge). The width of the lead depends on the prevailing winds; with west winds the lead may open 10 km or more (19) while with east winds the lead will be narrow as the loose pack ice is pushed towards the ice edge.

A flaw lead develops along the south coast of Devon Island between the landfast ice (attached to shore) and mobile pack ice in central Lancaster Sound. Early in the winter, before the ice edge has consolidated across the Sound, (or when the ice edge remains at Griffith Island) the lead can extend from Cape Sherard to Resolute. Later in the winter the lead may be shorter and discontinuous. The width of the lead along Devon Island depends on the north-south prevailing winds.

North-south leads are common in Lancaster Sound when the ice cover is mobile, as shown in Figure 23. Their formation depends on differential ice drift in the Sound and on the prevailing wind directions. East-west leads develop when the ice in the central portion of the Sound is drifting faster than the mobile ice along the sides. The east-west leads usually last only for several days before the predominant north-south leads reform (19). These lead configurations can exist separately or in some combination, forming a cross-fractured ice cover as shown in Figure 24.

Leads in the vicinity of Prince Leopold Island often fracture the ice cover into discrete floes early in the winter. After the ice edge consolidates, these leads generally extend from Prince Leopold Island towards Prince Regent Inlet or across to Maxwell Bay or Powell Inlet. Leads can also extend across the entrance of Prince Regent Inlet to Brodeur Peninsula and are often oriented north-south.

Several lead patterns develop independently of the ice edge location. These are outlined below.

The northern section of Prince Regent Inlet is a zone of fractured ice due to opposing currents in the Inlet, which causes an east-west fracture pattern.

A fractured ice zone extends along the east coast of Devon Island from Lady Ann Strait around to Cape Warrender. The leads in this zone persist throughout the winter months.

A shear zone is created off the northeast and east coasts of Bylot Island as the ice from Lancaster Sound drifts eastward along the north coast of the island into Baffin Bay. This shear zone is characterized by many leads and open water areas.

RECURRING FLAW LEADS

Regional Map 1 East - *Lancaster Sound*

Legend

Envelope of recurring leads associated with the ice edge establishing at the eastern end of Lancaster Sound between Devon Island and Bylot Island or Borden Peninsula (Position A on Summary Map 4).

Envelope of recurring leads associated with the ice edge establishing at Prince Leopold Island (Position C on Summary Map 4).

Envelope of recurring leads associated with the ice edge establishing at Griffith Island (Position D on Summary Map 4). The east-west leads extending along the north and south coasts of Lancaster Sound can also occur when the ice edge is at Griffith Island.

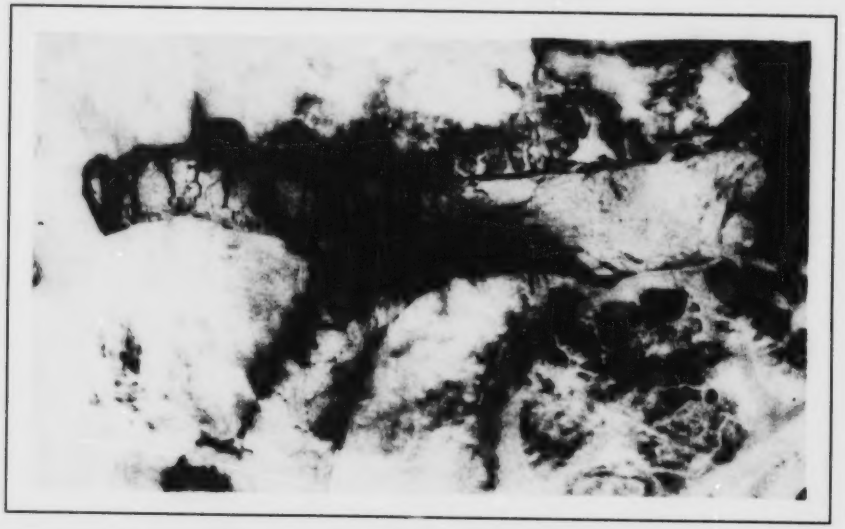
Envelopes of recurring leads which are independent of the ice edge location and are associated with

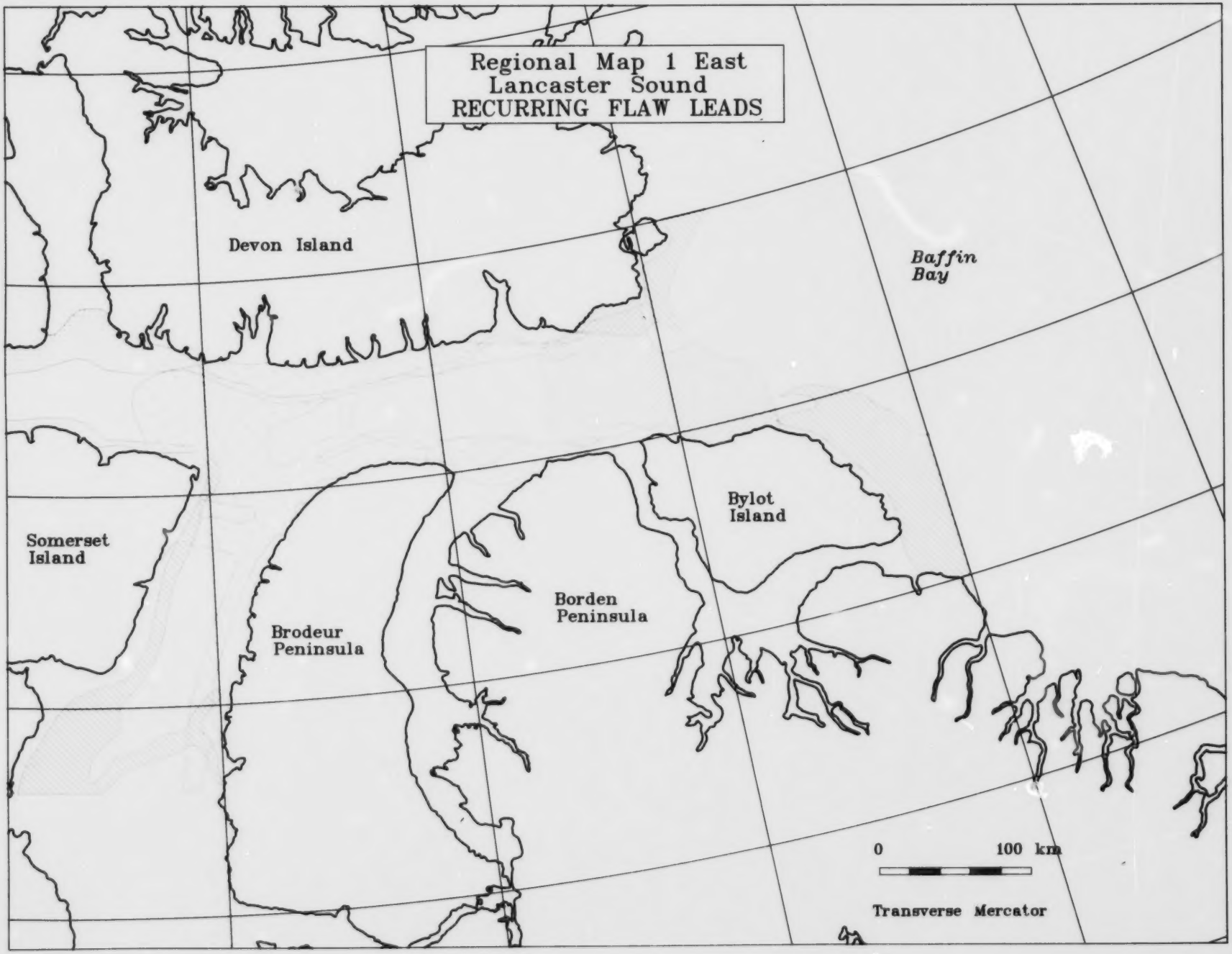
- the fractured ice zone extending from Lady Ann Strait along the east coast of Devon Island around to Cape Warrender,
- the shear ice zone along the northeast and east coasts of Bylot Island, and
- the fractured ice zone in Prince Regent Inlet.

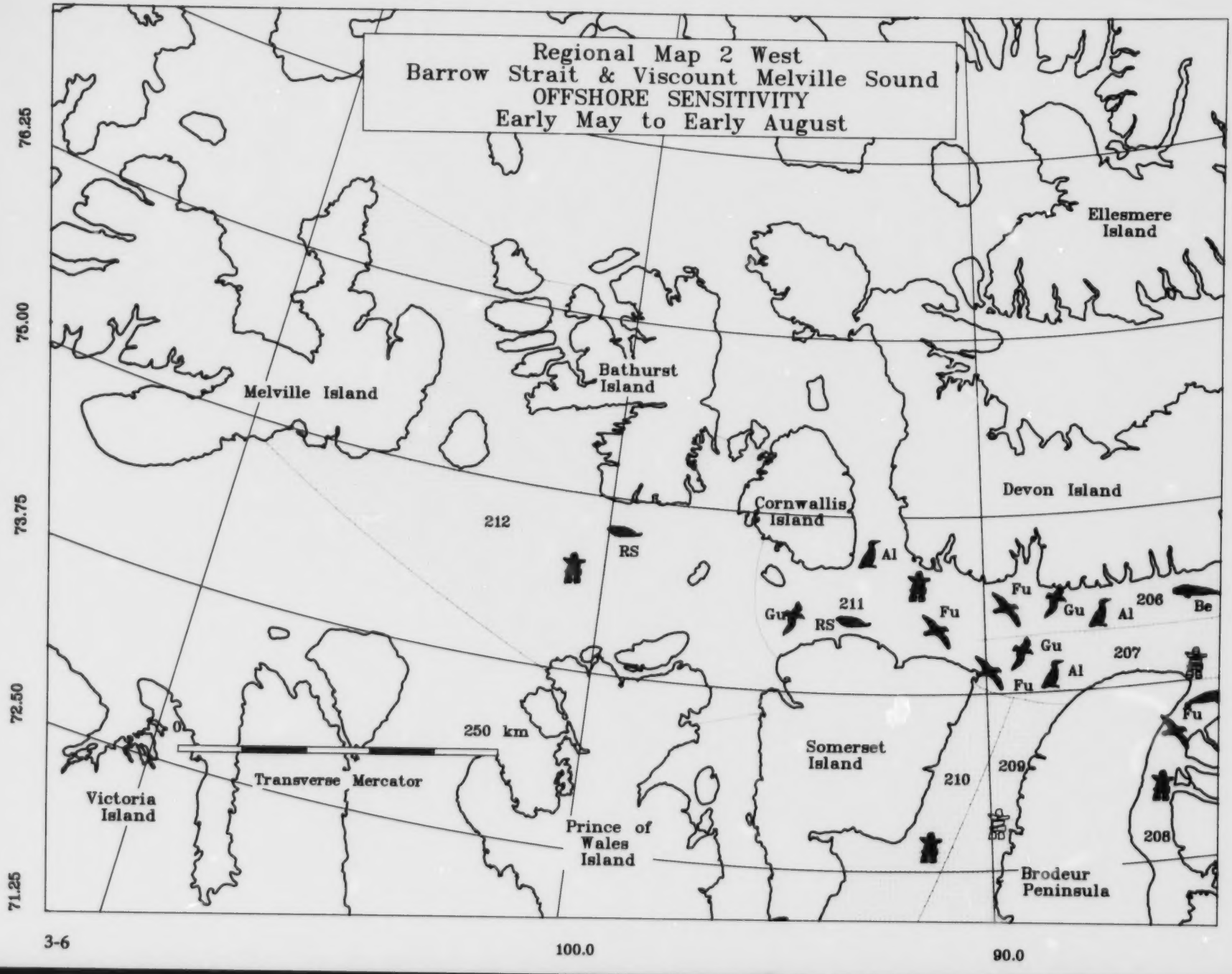
References: 3,9,19,20,21,22,24,28

Figure 23 Ice Cover with North-South Leads Predominating
January 21, 1982 - NOAA Image

Figure 24 Cross Fractured Ice Cover
January 27, 1982 - NOAA Image




Regional Map 1 East
Lancaster Sound
RECURRING FLAW LEADS
Devon Island
Baffin
Bay
Bylot
Island
Somerset
Island
Borden
Peninsula
Brodeur
Peninsula
0
100 km
Transverse Mercator
76.25
75.00
73.75
72.50
71.25
90.00
85.00
80.00
75.00


Regional Map 2 West
Barrow Strait & Viscount Melville Sound
OFFSHORE SENSITIVITY
Early May to Early August
76.25
75.00
73.75
72.50
71.25
Ellesmere Island
Melville Island
Bathurst Island
Devon Island
Cornwallis Island
212
RS
Al
Fu
Gu
211
RS
Fu
Gu
Al
206
Be
Gu
207
Al
Fu
Fu
0
250 km
Transverse Mercator
Somerset Island
209
210
208
Victoria Island
Prince of Wales Island
Brodeur Peninsula
3-6
100.0
90.0

Regional Map 2 West - *Barrow Strait & Viscount Melville Sound*

Legend

*Offshore Sensitivity**

From Early May to Early August

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A

See Operational Maps for Shoreline Sensitivity

Area

No.	Name	Sensitivity Ranking
206	Northern Lancaster Sound	121.30
207	Southern Lancaster Sound	124.30
208	Admiralty Inlet	77.50
209	Eastern Prince Regent Inlet	60.30
210	Western Prince Regent Inlet	64.30
211	Barrow Strait	99.30
212	Viscount Melville Sound	62.50

- Greatest Importance R
- Highly Important R
- Important R
- Narwhal Na
- Beluga Be
- Bowhead Bh
- Ringed Seal RS
- Fulmer Fu
- Gull Gu
- Alcid Al

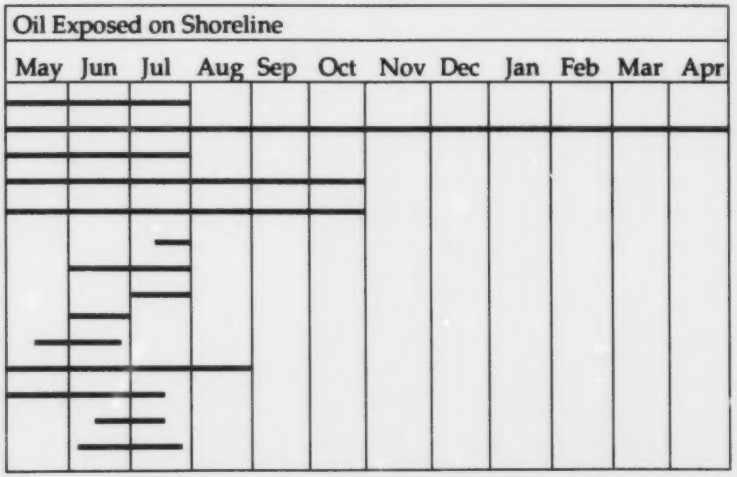
Environmental Description

R 207 During spring, residents of both Resolute Bay and Arctic Bay hunt polar bears along the floe edge of Prince Regent Inlet, extending from north of Cape Clarence on the east side of Prince Leopold Island to approximately 73° 30-45'N on Brodeur Peninsula. Seals are also hunted at this time. Ringed seals are hunted on the ice at their breathing holes, while bearded seals are taken at the floe edge. During late spring, walrus are hunted at the floe edge (14). In some years, a small number are taken from the floe edge at Cape Crauford (22). Hunters from Arctic Bay harvest polar bears and narwhals extensively at the mouth of Admiralty Inlet and occasionally along the north coast of Brodeur Peninsula in Lancaster Sound.

R 208 Narwhals and seals are hunted at the ice cracks, off the headlands in Admiralty Inlet, from July to August and April to May, respectively. Seals are hunted at their breathing holes in the Inlet year-round by Arctic Bay residents. Polar bear kills are reported throughout the Inlet, but tend to be concentrated adjacent to Adams and Strathcona Sounds (32, 70). The floe edge at the mouth of Admiralty Inlet is very important to Arctic Bay residents for tourism and domestic hunting activities during the spring. Floe edge tourism trips are staged from Cape Crauford on the north coast of the Brodeur Peninsula (56).

R 209, 210 An ice edge occurs off Fury Point south of Creswell Bay through June and July. In winter and early spring, the floe edge is at the mouth of the inlet from Cape Clarence to 73° 30-45'N. Ringed and bearded seals are hunted on the sea ice at their breathing holes and at the floe edge in late spring. Polar bear hunting can occur adjacent to the floe edge until the end of May or until the quota is reached (22). A permanent outpost camp is located in Creswell Bay. Hunters use both the offshore and nearshore for spring hunting of seals and polar bears. In Prince Regent Inlet, offshore Brodeur Peninsula, domestic and sport hunting is conducted for polar bear during the spring by Arctic Bay residents. Residents also hunt seal and eider duck during the spring (56).

R 211 During spring, summer, and early fall, ringed and bearded seals are hunted in the marine areas of Wellington Channel and Barrow Strait along the floe edge by hunters from Resolute Bay. Allen Bay is a noted area for hunting bearded seals. Narwhals, belugas, and walrus are hunted by Resolute Bay hunters in June and July along the floe edge to the south of Cornwallis Island (extending in a southerly direction past Cheyne Point on Griffith Island). Concentrations of polar bear kills are reported along the floe edge between Cape Anne and Cape Rennell (31, 32). The offshore area adjacent to Resolute Bay is used extensively for



Occurrence of Species and Resource Use

- R 207
- R 208
- R 209, 210
- R 211
- R 212
- Na 208
- Be 206
- Bh 207
- RS 211, 212
- FuGuAl 206, 207
- Fu 208
- Fu 211
- Gu 211
- Al 211

hunting and recreation purposes by residents.

R 212 A year-round occupied outpost camp is located on Prince of Wales Island in Back Bay. Residents of the outpost camp and Resolute Bay use the offshore and nearshore as extensive hunting grounds during the spring and early summer season for polar bear and ringed seal (56). Some ringed and bearded seals and walrus are hunted in the spring and summer along the ice edge in the McDougall Sound area. Hunters often use the floe edge. On Melville Island, there is a polar bear quota of 12, which is shared between hunters from Resolute Bay and Holman Island. In recent years, the quota has been used for sport hunting. Every second year, Resolute Bay hunters use the coastal waters of Byam Martin Island and Byam Channel (14).

Na 208 As the fast ice begins to break-up in mid-July, large numbers of narwhals enter Admiralty Inlet (15).

Be 206 During June and July, thousands of belugas migrate westward in the northern part of Lancaster Sound, then cross the western part of the Sound to summering areas around Somerset Island (18, 66).

Bh 207 During July, a large proportion of the bowhead population migrates westward through Lancaster Sound, particularly in the southern half of the Sound (35).

RS 211, 212 Ringed seals are abundant throughout most of the year in western Barrow Strait (18, 19, 65). In June, they haul-out to moult and high densities have been recorded in areas of annual ice (18, 38, 39, 65).

FuGuAl 206, 207 Thousands of fulmars, murres, and guillemots and hundreds of kittiwakes concentrate along the ice edge that extends from Cape Hurd on Devon Island to Prince Leopold Island in most years until late June (1).

Fu 208 A colony of 50,000 fulmars nests on the east side of Admiralty Inlet at Baillarge Bay (7). The extent to which the offshore region of Admiralty Inlet is used by fulmars is not known.

Fu 211 Prior to ice break-up, hundreds of fulmars occupy open leads near the Cape Liddon colony. Fulmars also occur in large numbers in association with pack ice along the south Devon coast and along the Somerset Island coast east of Cape Admiral M'Clintock (1).

Gu 211 The ice edge across Resolute Passage attracts hundreds of kittiwakes from mid-June until early July (4, 9). Lesser numbers utilize the ice edge from Griffith Island to Somerset Island. Kittiwakes are distributed offshore in low densities during this period.

Al 211 During the period from early June until late July, the offshore ice edges attract tens of thousands of murres and guillemots. The highest densities occur at the Wellington Channel ice edge (up to 276/km^2). Over 80% of alcids utilize offshore ice edges in preference to coastal ice edges in this region (4).

Regional Map 2 East - *Lancaster Sound*

Environmental Description

R 202-208 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park. The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.

R 202, 204 Polar bears may be hunted throughout the area on the sea ice until May 31. Seals and narwhals are hunted south of Cape Walter Bathurst, while walrus are hunted near the floe edge south of Cape Burney. Naturalist touring is conducted at the floe edge in the Baffin Bay and Pond Inlet area.

R 205 Narwhals and seals are hunted at the ice cracks, off the headlands in Navy Board, Tay, and Milne Inlets, from July to August and April to May, respectively. Intensive hunting occurs at the floe edge at the mouth of Navy Board and Pond Inlets. Hunter kills for seal are concentrated in Pond Inlet east of the community towards the Baffin Bay floe edge. Some walrus hunting occurs at the Navy Board Inlet floe edge in the late spring. Polar bears may be hunted throughout the area on the sea ice until May 31. Naturalist and recreational touring is conducted on the sea ice to destinations on Bylot Island and the Button Point floe edge.

R 206 Arctic Bay hunters conduct both domestic and sport hunting for polar bears, in conjunction with muskox hunting, in the Croker Bay and Dundas Harbour areas during the spring (56).

R 207 During spring, residents of both Resolute Bay and Arctic Bay hunt polar bears along the floe edge of Prince Regent Inlet, extending from north of Cape Clarence on the east side of Prince Leopold Island to approximately 73° 30-45'N on Brodeur Peninsula. Seals are also hunted at this time. Ringed seals are hunted on the ice at their breathing holes, while bearded seals are taken at the floe edge. During late

Legend

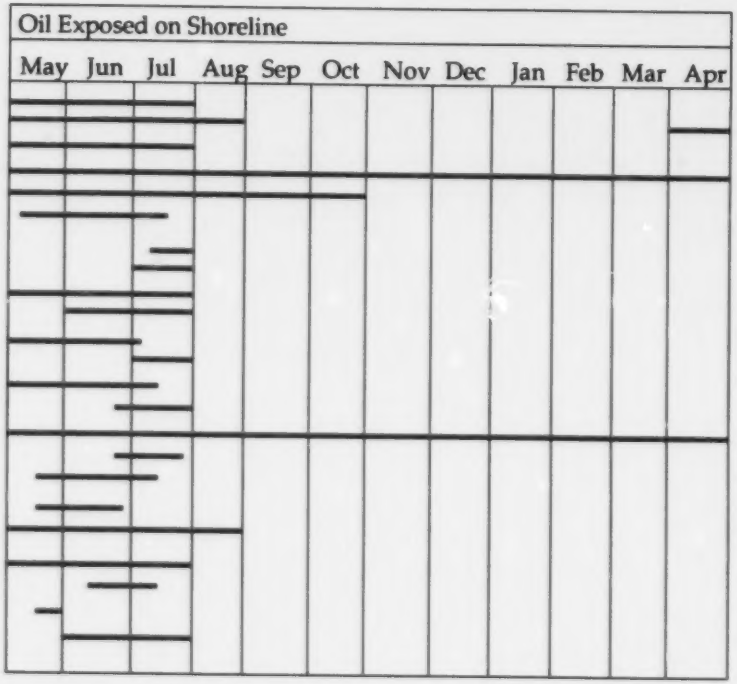
*Offshore Sensitivity**
From Early May to Early August

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Operational Maps for Shoreline Sensitivity

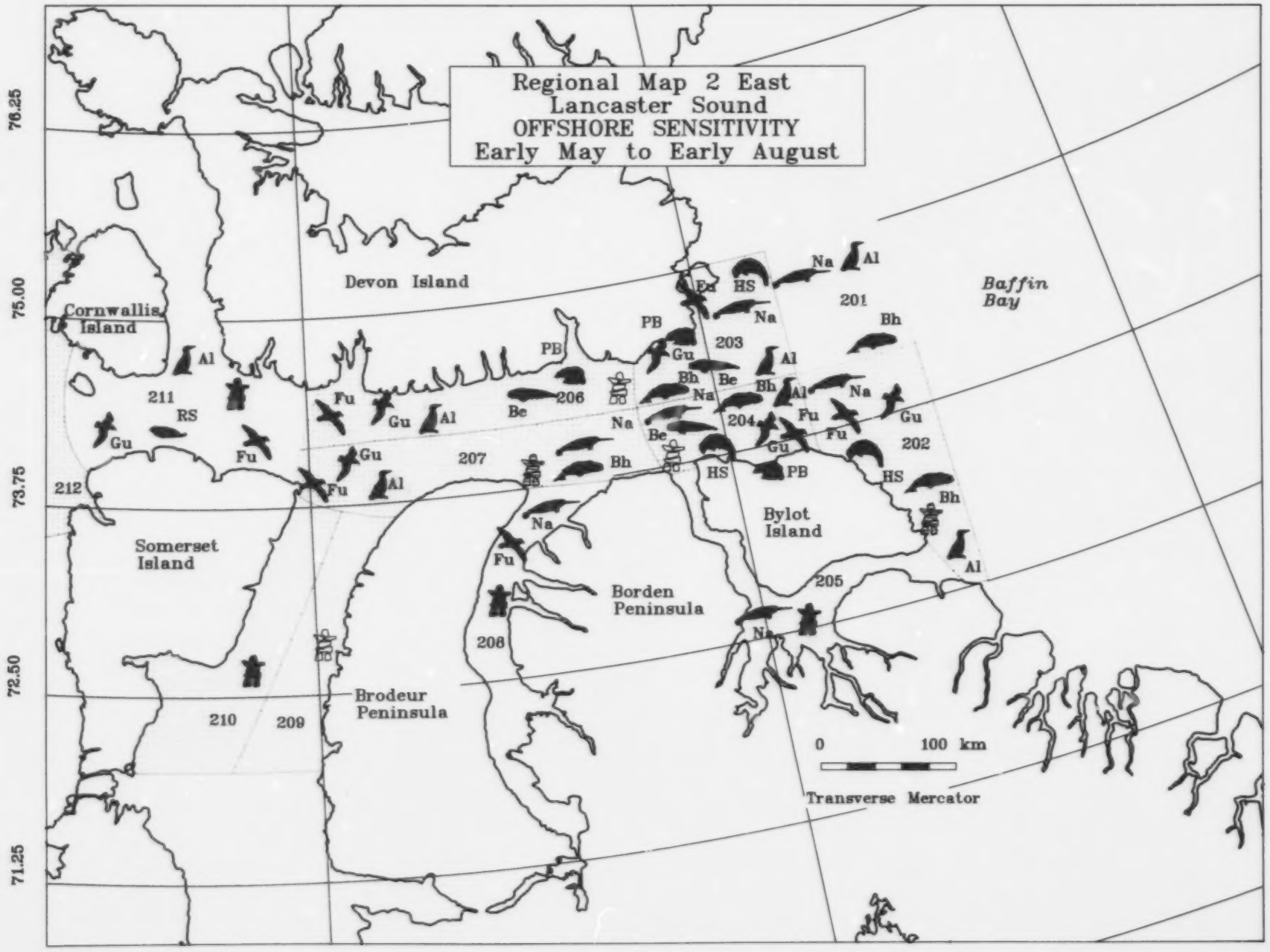
Area

No.	Name	Sensitivity Ranking
201	Baffin Bay	81.50
202	Baffin Bay	123.30
203	Northeastern Lancaster Sound	131.50
204	Southeastern Lancaster Sound	145.80
205	Navy Board & Pond Inlets	61.80
206	Northern Lancaster Sound	121.30
207	Southern Lancaster Sound	124.30
208	Admiralty Inlet	77.50
209	Eastern Prince Regent Inlet	60.30
210	Western Prince Regent Inlet	64.30
211	Barrow Strait	99.30
212	Viscount Melville Sound	62.50



Occurrence of Species and Resource Use

- R 202, 204
- R 205
- R 206, 207, 209, 210
- R 208
- R 211
- Na 201-204
- Na 205, 208
- Na 207
- Be 203, 204
- Be 206
- Bh 201-204
- Bh 207
- PB 203, 204, 206
- HS 202, 204
- RS 211
- FuGuAl 202
- FuGuAl 203, 204
- FuGuAl 206, 207
- Fu 208
- Fu 211
- Gu 211
- Al 201-204
- Al 211


Regional Map 2 East
Lancaster Sound
OFFSHORE SENSITIVITY
Early May to Early August
76.25
75.00
73.75
72.50
71.25
90.0
80.0
Devon Island
Cornwallis Island
Somerset Island
Borden Peninsula
Brodeur Peninsula
Bylot Island
Baffin Bay
201
202
203
204
205
206
207
208
209
210
211
212
Al
Bh
Be
Fu
Gu
HS
Na
PB
RS
0 100 km
Transverse Mercator

spring, walrus are hunted at the floe edge (14). In some years, a small number are taken from the floe edge at Cape Crauford (22). Hunters from Arctic Bay harvest polar bears and narwhals extensively at the mouth of Admiralty Inlet and occasionally along the north coast of Brodeur Peninsula in Lancaster Sound.

R 208 Narwhals and seals are hunted at the ice cracks, off the headlands in Admiralty Inlet, from July to August and April to May, respectively. Seals are hunted at their breathing holes in the Inlet year-round by Arctic Bay residents. Polar bear kills are reported throughout the Inlet, but tend to be concentrated adjacent to Adams and Strathcona Sounds (32, 70). The floe edge at the mouth of Admiralty Inlet is very important to Arctic Bay residents for tourism and domestic hunting activities during the spring. Floe edge tourism trips are staged from Cape Crauford on the north coast of the Brodeur Peninsula (56).

R 209-210 An ice edge occurs off Fury Point south of Creswell Bay through June and July. In winter and early spring, the floe edge is at the mouth of the inlet from Cape Clarence to 73° 30-45'N. Ringed and bearded seals are hunted on the sea ice at their breathing holes and at the floe edge in late spring. Polar bear hunting can occur adjacent to the floe edge until the end of May or until the quota is reached (22). A permanent outpost camp is located in Creswell Bay. Hunters use both the offshore and nearshore for spring hunting of seals and polar bears. In Prince Regent Inlet, offshore Brodeur Peninsula, domestic and sport hunting is conducted for polar bear during the spring by Arctic Bay residents. Residents also hunt seal and eider duck during the spring (56).

R 211 During spring, summer, and early fall, ringed and bearded seals are hunted in the marine areas of Wellington Channel and Barrow Strait along the floe edge by hunters from Resolute Bay. Allen Bay is noted area for hunting bearded seals. Narwhals, belugas, and walrus are hunted by Resolute Bay hunters in June and July along the floe edge to the south of Cornwallis Island (extending in a southerly direction past Cheyne Point on Griffith Island). Concentrations of polar bear kills are reported along the floe edge between Cape Anne and Cape Rennell (31, 32). The offshore area adjacent to Resolute Bay is used extensively for hunting and recreation purposes by residents.

Na 201-204 Narwhals arrive at the entrance of Lancaster Sound in a broadfront migration that begins in early May and peaks in mid-July (35, 40, 41). If an ice edge persists across the eastern entrance of the Sound, dense aggregations develop along the edge, particularly in the southern half of the Sound (29, 40, 41). During late June and early July, high densities of narwhals occur along the ice edges of Navy Board and Pond Inlets (3, 26, 27, 35).

Na 205 As the fast ice begins to break-up in mid-July, narwhals move through Pond and Navy Board Inlets toward their summering grounds in Eclipse Sound (25, 27).

Na 207 During July, a large proportion of the narwhal population migrates westward through Lancaster Sound, particularly in the southern half of the Sound (28, 35). High densities occur along the Admiralty Inlet ice edge just prior to break-up in July.

Na 208 As the fast ice begins to break-up in mid-July, large numbers of narwhals enter Admiralty Inlet (15).

Be 203, 204 Belugas arrive at the entrance of Lancaster Sound in May and closely follow the coast of Devon Island (35, 40, 41). Peak migration occurs in July. If an ice edge persists across the eastern entrance of the Sound, high densities of belugas develop along the ice edge (29, 40, 41).

Be 206 During June and July, thousands of belugas migrate westward in the northern part of Lancaster Sound, then cross the western part of the Sound to summering areas around Somerset Island (18, 66).

Bh 201-204 Bowheads arrive at the entrance of Lancaster Sound in a broadfront migration that begins in May and peaks in late June to early July (40, 41). The majority of the endangered Baffin Bay population of Bowheads passes through Lancaster Sound during this period (12). Historically, the area off northeastern Bylot Island and the entrance of Pond Inlet was an important whaling ground, presumably because it was (and still is) an important feeding area for the whales (60).

Bh 207 During July, a large proportion of the bowhead population migrates westward through Lancaster Sound, particularly in the southern half of the Sound (35).

PB 203, 204 Polar bears concentrate along the Lancaster Sound ice edge in those years that the ice edge persists late in the season (62).

PB 206 Polar bears concentrate along the ice edge when it persists (as it does in many years) across the eastern entrance to Barrow Strait (18).

HS 202, 204 Harp seals arrive at the entrance of Lancaster Sound in late June, following the ice edge along northeastern Baffin Island (40, 41). Numbers entering the Sound vary each year from tens to hundreds of thousands (31, 72). High densities of harp seals often occur during July along the Navy Board Inlet ice edge (29, 35, 40, 41).

RS 211 Ringed seals are abundant throughout most of the year in western Barrow Strait (18, 19, 65). In June, they haul-out to moult and high densities have been recorded in areas of annual ice (18, 38, 39, 65).

FuGuAl 202 The Pond Inlet ice edge attracts thousands of fulmars and murres from late June until break-up in late July (52). Hundreds of glaucous gulls occur at the ice edge from mid-May to late June (52).

FuGuAl 203, 204 In years when ice break-up in Lancaster Sound is unusually late (i.e., 1978, 1979), the ice edge across the Sound extends from Cape Warrender on Devon Island to Bylot Island and persists as late as mid-July. This ice edge attracts thousands of fulmars, murres, guillemots, and kittiwakes (50). High densities of migrating fulmars, murres, guillemots, and kittiwakes (80%) occur in offshore waters from mid-May through mid-July as flocks move into Lancaster Sound from Baffin Bay (79). The Navy Board Inlet ice edge attracts

thousands of fulmars and murres and hundreds of kittiwakes from late June until break-up in late July (52, 79).

FuGuAl 206, 207 Thousands of fulmars, murres, and guillemots and hundreds of kittiwakes concentrate along the ice edge that extends from Cape Hurd on Devon Island to Prince Leopold Island in most years until late June (1).

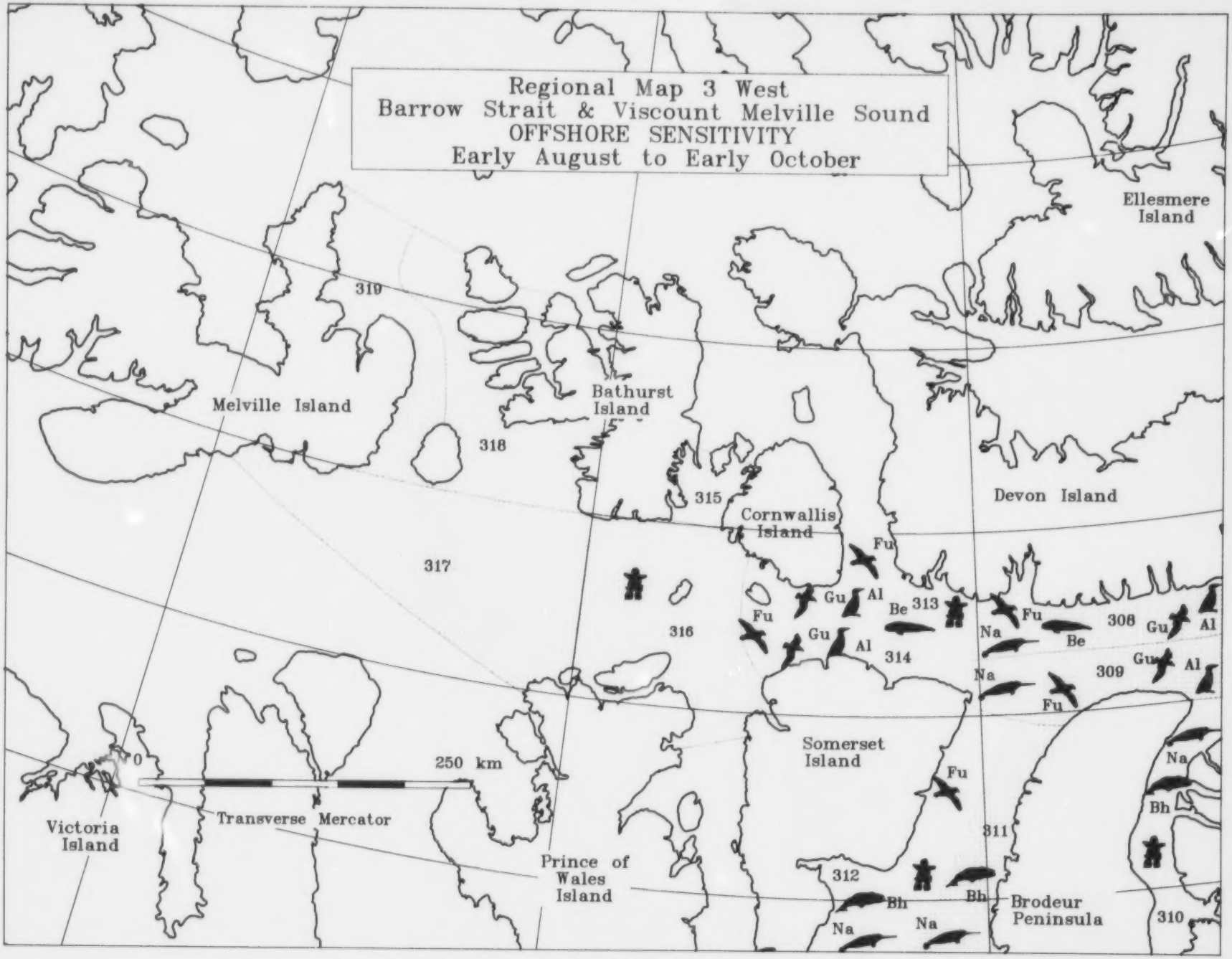
Fu 208 A colony of 50,000 fulmars nests on the east side of Admiralty Inlet at Baillarge Bay (7). The extent to which the offshore region of Admiralty Inlet is used by fulmars is not known.

Fu 211 Prior to ice break-up, hundreds of fulmars occupy open leads near the Cape Liddon colony. Fulmars also occur in large numbers in association with pack ice along the south Devon coast and along the Somerset Island coast east of Cape Admiral M'Clintock (1).

Gu 211 The ice edge across Resolute Passage attracts hundreds of kittiwakes from mid-June until early July (4, 9). Lesser numbers utilize the ice edge from Griffith Island to Somerset Island. Kittiwakes are distributed offshore in low densities during this period.

Al 201-204 From mid- to late May, hundreds of thousands of dovekies move into eastern Lancaster Sound and Baffin Bay en route to breeding colonies in northwest Greenland. They gather in huge flocks near heavy pack ice at this time (52).

Al 211 During the period from early June until late July, the offshore ice edges attract tens of thousands of murres and guillemots. The highest densities occur at the Wellington Channel ice edge (up to 276/km^2). Over 80% of alcids utilize offshore ice edges in preference to coastal ice edges in this region (4).


Regional Map 3 West
Barrow Strait & Viscount Melville Sound
OFFSHORE SENSITIVITY
Early August to Early October
Ellesmere Island
Melville Island
Bathurst Island
Devon Island
Cornwallis Island
Somerset Island
Prince of Wales Island
Victoria Island
Brodeur Peninsula
Transverse Mercator
250 km
0
319
318
315
317
316
313
314
312
311
310
309
308
Fu
Gu
Al
Be
Na
Bh
78.25
75.00
73.75
72.50
71.25
100.0
90.0

Regional Map 3 West - *Barrow Strait & Viscount Melville Sound*

Environmental Description

R 308-310 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park.
R 309 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.
R 310 Seal hunting is reported year-round in Admiralty Inlet, although hunting may be restricted to the nearshore. During August and September, bearded seals are hunted in Victor Bay and adjacent to Giants Castle. Walrus are hunted offshore of Turner Cliffs and Giants Castle in late spring and summer (14). Tourism activities are staged in Admiralty Inlet from a base camp at Kakiak Point. Narwhal and seals are hunted in the open water throughout the area (56).
R 312 Hunters from Resolute Bay take narwhals and beluga from several locations along the east coast of Somerset Island at Elwin Bay, Cape Clarence, and Batty Bay. Ringed and bearded seals are hunted by boat in the nearshore and offshore of Sarvak Channel, inner Creswell Bay, and Creswell Bay. The area is adjacent to the outpost camp at Creswell Bay and residents hunt narwhals, seals, and beluga in Creswell Bay and Prince Regent Inlet.
R 313 Residents of Resolute Bay hunt seals in the marine areas year-round. During the open water season, ringed and bearded seals are hunted along the south coast in Resolute Bay, Assistance Bay, Allen Bay, and McDougall Sound (14).
R 316 The offshore area immediately west of Cornwallis Island is used extensively by Resolute Bay residents for travel to recreational camping and egg gathering sites on Browne and Somerville Islands. A year-round occupied outpost camp is located at Back Bay. The residents use the open water offshore to hunt ringed and bearded seals, belugas, and walrus. Arctic char are caught in Back Bay and adjacent to the sea outlet of Allen Lake.
Na 308, 309 Eastward migration of narwhals from summering areas begins in mid-September and by the end of September large numbers are present in eastern Lancaster Sound (35). Although narwhals are widely distributed throughout the Sound at this time, numbers and densities are highest on the southern side (41).
Na 310 A large proportion of the narwhal population summers (July-August) in southern Admiralty Inlet (15, 17).
Na 311, 312 Prince Regent Inlet is a major summering area of narwhals (15, 71).
Be 308, 313 Eastward migration of belugas from summering areas begins in early September and the majority follow the north side of Lancaster Sound along the coast of Devon Island (11, 35).

Legend

*Offshore Sensitivity**
From Early August to Early October

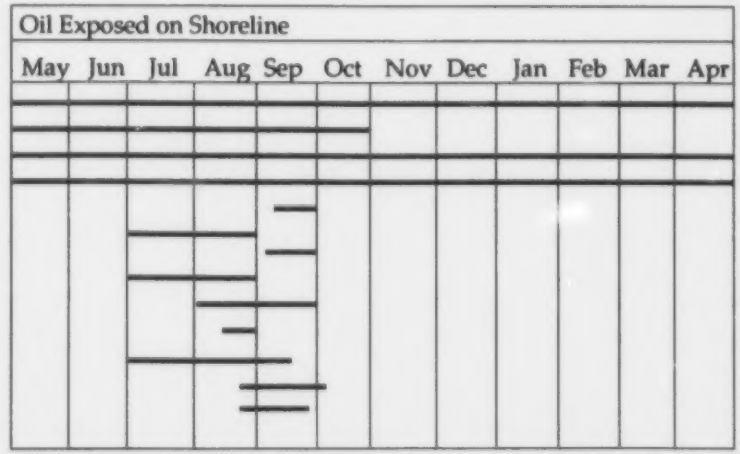
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Operational Maps for Shoreline Sensitivity

Area

No.	Name	Sensitivity Ranking
308	Northern Lancaster Sound	109.00
309	Southern Lancaster Sound	101.00
310	Admiralty Inlet	93.80
311	Eastern Prince Regent Inlet	57.00
312	Western Prince Regent Inlet	82.30
313	Northern Barrow Strait	94.50
314	Southern Barrow Strait	72.30
315	McDougall Sound	39.50
316	East Viscount Melville Sound	69.30
317	Viscount Melville Sound	28.30
318	Austin Channel	28.30
319	Byam Channel	28.30

Greatest Importance R
Highly Important R
Important R
Narwhal Na
Beluga Be
Bowhead Bh
Fulmer Fu
Gull Gu
Alcid Al



Occurrence of Species and Resource Use

R 310
R 312
R 313
R 316
Na 308, 309
Na 310-312
Be 308. 313
Bh 310-312
Fu 308, 309
Fu 312
FuGuAl 313, 314
Gu 308, 309
Al 308, 309

Bh 310 Southern Admiralty Inlet is an important summering ground (July - August) of bowheads (12).

Bh 311, 312 Prince Regent Inlet is a major summering ground of bowheads, particularly those with calves (21).

Fu 308, 309 During August and September, fulmars are widespread in offshore Lancaster Sound until late September.

Fu 312 In late August, thousands (10,000 in 1974) of fulmars are present in the outer Creswell Bay area (1).

FuGuAl 313, 314 In late summer, Barrow Strait is ice free and no ice edges remain. Offshore areas near colonies are important to murres until the end of August and to fulmars and kittiwakes until mid-September (54).

Gu 308, 309 From late August to mid-September, kittiwakes and their fledglings disperse throughout the coastal waters of Lancaster Sound. They are abundant offshore until the end of September (79), although large numbers gather along the southeast Devon coast in some years (52). In late September and early October, numbers of ivory gulls increase offshore as fall migration begins.

Al 308, 309 From late August to the end of September, murres are moulting. The flightless adults and chicks swim with the current eastward towards Baffin Bay. Large numbers of murres are present in the offshore waters at this time.

Regional Map 3 East - *Lancaster Sound*

Environmental Description

R 302-310 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park.

R 309 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.

R 305, 306 During the open water season, ringed and bearded seals are hunted intensively in Eclipse Sound, Milne Inlet, and Tay Sound, with the harvest concentrated primarily adjacent to the community of Pond Inlet and the Kounuk camp (6). Narwhals and occasionally belugas are taken in Eclipse Sound and Milne Inlet during the summer by Pond Inlet residents (14). Eclipse Sound and Pond Inlet are main travel routes to Bylot Island destinations with recreation and tourism value.

R 307 During the open water season, some seal hunting occurs along Borden Peninsula. Walrus are hunted at Wollaston Island. Narwhals are hunted in the summer, but are more likely taken in nearshore areas.

R 308 Occasional open water crossings of Lancaster Sound have been undertaken by Arctic Bay hunters to hunt whale and muskox. Activities occur both in the nearshore and offshore areas (56).

R 310 Seal hunting is reported year-round in Admiralty Inlet, although hunting may be restricted to the nearshore. During August and September, bearded seals are hunted in Victor Bay and adjacent to Giants Castle. Walrus are hunted offshore of Turner Cliffs and Giants Castle in late spring and summer (14). Tourism activities are staged in Admiralty Inlet from a base camp at Kakiak Point. Narwhal and seals are hunted in the open water throughout the area (56).

R 312 Hunters from Resolute Bay take narwhals and beluga from several locations along the east coast of Somerset Island at Elwin Bay, Cape Clarence, and Batty Bay. Ringed and bearded seals are hunted by boat in the nearshore and offshore of Sarvak Channel, inner Creswell Bay, and Creswell Bay. The area is adjacent to the outpost camp at Creswell Bay and residents hunt narwhals, seals, and beluga in Creswell Bay and Prince Regent Inlet.

R 313 Residents of Resolute Bay hunt seals in the marine areas year-round. During the open water season, ringed and bearded seals are hunted along the south coast in Resolute

Legend

*Offshore Sensitivity**
From Early August to Early October

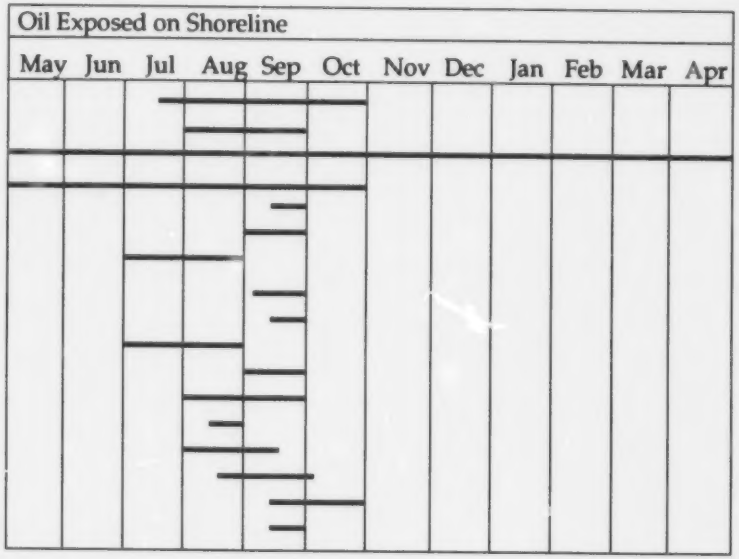
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Operational Maps for Shoreline Sensitivity

Area

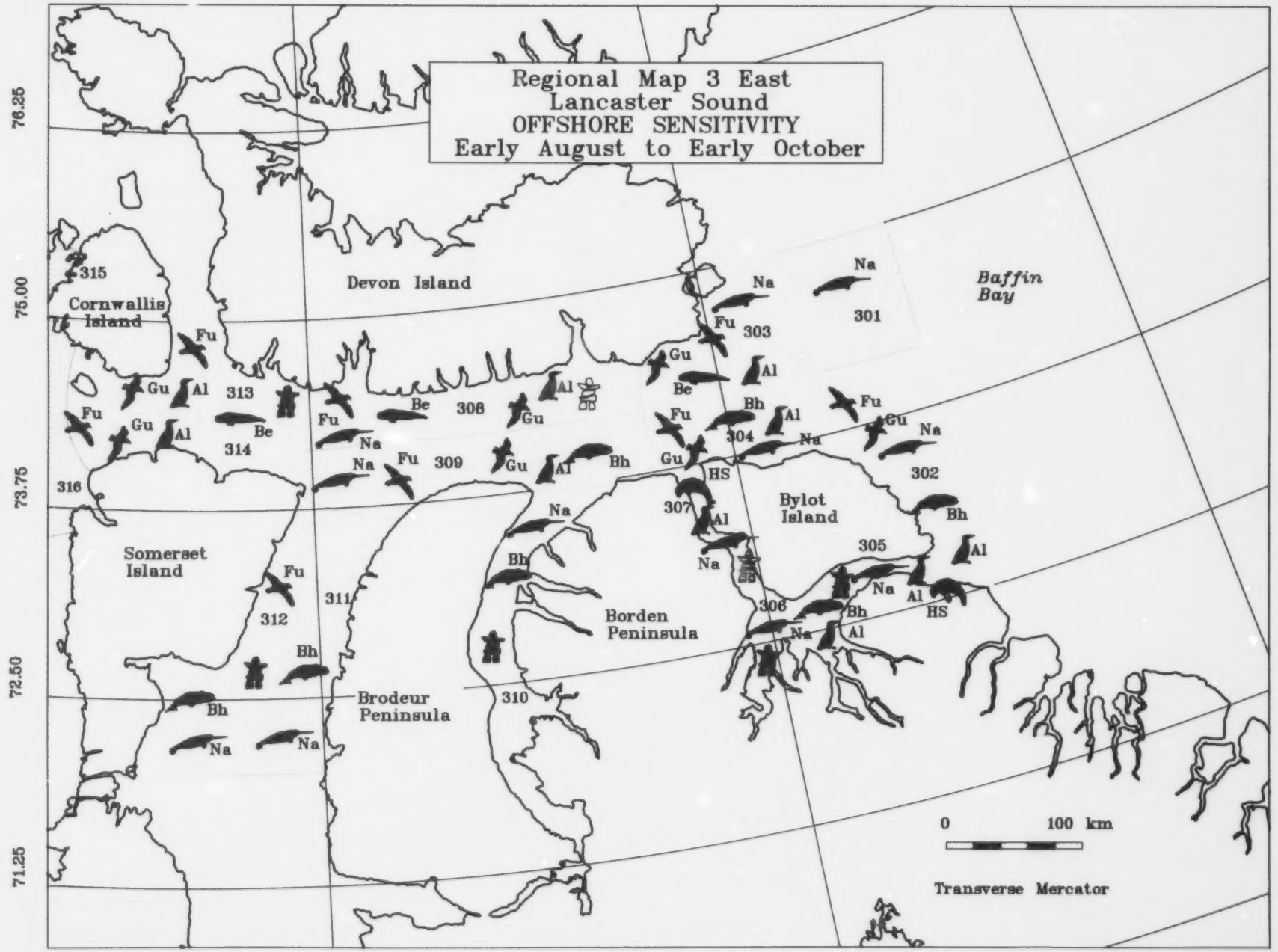
No.	Name	Sensitivity Ranking
301	Baffin Bay	34.30
302	Baffin Bay	89.50
303	Northeastern Lancaster Sound	88.50
304	Southeastern Lancaster Sound	89.50
305	Pond Inlet	109.50
306	Eclipse Sound	109.50
307	Navy Board Inlet	107.50
308	Northen Lancaster Sound	109.00
309	Southern Lancaster Sound	101.00
310	Admiralty Inlet	93.80
311	Eastern Prince Regent Inlet	57.00
312	Western Prince Regent Inlet	82.30
313	Northern Barrow Strait	94.50
314	Southern Barrow Strait	72.30

- Greatest Importance R
- Highly Important R
- Important R
- Narwhal Na
- Beluga Be
- Bowhead Bh
- Harp Seal HS
- Fulmer Fu
- Gull Gu
- Alcid Al



Occurrence of Species and Resource Use

R 305-307
R 308
R 310, 313
R 312
Na 301-304, 308, 309
Na 305, 307
Na 306, 310-312
Be 303, 308, 313
Bh 302, 304, 309
Bh 306, 310-312
HS 305, 307
Fu 302-304, 308, 309
Fu 312
FuGuAl 313, 314
Gu 302-304, 308, 309
Al 302-304, 308, 309
Al 305-307


Regional Map 3 East
Lancaster Sound
OFFSHORE SENSITIVITY
Early August to Early October
Devon Island
Cornwallis Island
Somerset Island
Bylot Island
Borden Peninsula
Brodeur Peninsula
Baffin Bay
315
313
314
316
308
309
303
304
301
302
307
305
306
311
312
310
Fu
Gu
Al
Be
Na
Bh
HS
76.25
75.00
73.75
72.50
71.25
90.0
80.0
0
100 km
Transverse Mercator

Bay, Assistance Bay, Allen Bay, and McDougall Sound (14). The offshore area is adjacent to Resolute Bay and is used extensively during the open water season for recreational and hunting by Resolute Bay residents.

Na 301-304, 308, 309 Eastward migration of narwhals from summering areas begins in mid-September and by the end of September large numbers are present in eastern Lancaster Sound (35). Although narwhals are widely distributed throughout the Sound at this time, numbers and densities are highest on the southern side (41).

Na 305, 307 During September, large aggregations of narwhals often occur at the mouths of Navy Board and Pond Inlets (35, 40, 41).

Na 306 Eclipse Sound and Milne Inlet is a major summering ground (July-August) of narwhals (41, 47).

Na 310 A large proportion of the narwhal population summers (July-August) in southern Admiralty Inlet (15, 17).

Na 311, 312 Prince Regent Inlet is a major summering area of narwhals (15, 71).

Be 303, 308, 313 Eastward migration of belugas from summering areas begins in early September and the majority follow the north side of Lancaster Sound along the coast of Devon Island (11, 35).

Bh 302, 304, 309 Eastward migration of bowheads from summering areas begins in late September and the majority move through the southern side of Lancaster Sound (12).

Bh 306 Eclipse Sound and Milne Inlet are an important summering ground (July - August) of bowheads (12).

Bh 310 Southern Admiralty Inlet is an important summering ground (July - August) of bowheads (12).

Bh 311, 312 Prince Regent Inlet is a major summering ground of bowheads, particularly those with calves (21).

HS 305, 307 During September, large aggregations of harp seals often occur at the mouths of Navy Board and Pond Inlets (35, 40, 41).

Fu 302-304, 308, 309 During August and September, fulmars are widespread in offshore Lancaster Sound until late September.

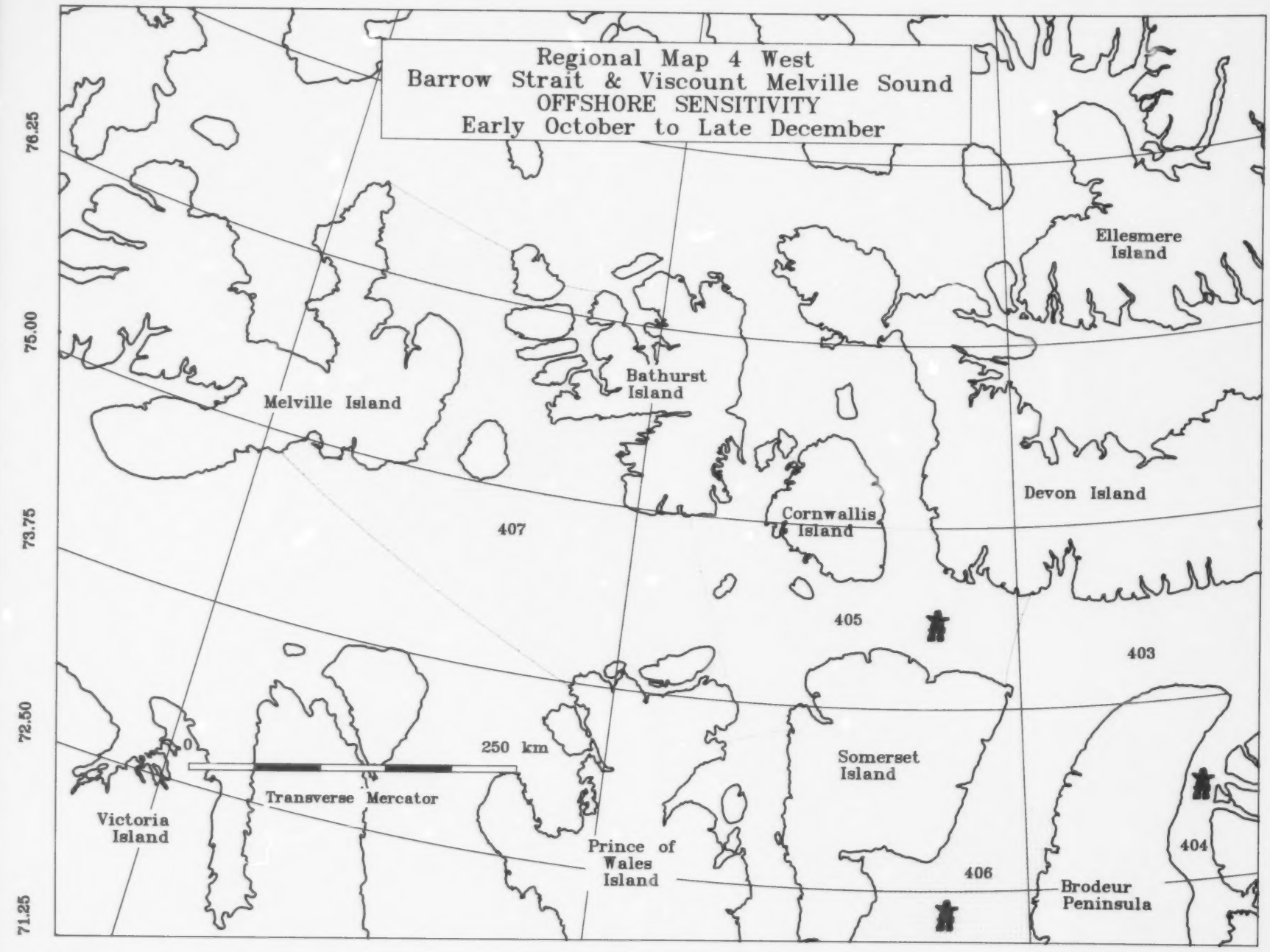
Fu 312 In late August, thousands (10,000 in 1974) of fulmars are present in the outer Creswell Bay area (1).

FuGuAl 313, 314 In late summer, Barrow Strait is ice free and no ice edges remain. Offshore areas near colonies are important to murres until the end of August and to fulmars and kittiwakes until mid-September (54).

Gu 302-304, 308, 309 From late August to mid-September, kittiwakes and their fledglings disperse throughout the coastal waters of Lancaster Sound. They are abundant offshore until the end of September (79), although large numbers gather along the southeast Devon coast in some years (52). In late September and early October, numbers of ivory gulls increase offshore as fall migration begins.

Al 302-304, 308, 309 From late August to the end of September, murres are moulting. The flightless adults and chicks swim with the current eastward towards Baffin Bay. Large numbers of murres are present in the offshore waters at this time.

Al 305-307 In late September, an unknown proportion of murre broods from Prince Leopold Island move through Navy Board Inlet and Pond Inlet on their way south to wintering areas (52).


Regional Map 4 West
Barrow Strait & Viscount Melville Sound
OFFSHORE SENSITIVITY
Early October to Late December
76.25
75.00
73.75
72.50
71.25
Ellesmere Island
Bathurst Island
Melville Island
Devon Island
Cornwallis Island
407
405
403
404
406
0
250 km
Transverse Mercator
Somerset Island
Victoria Island
Prince of Wales Island
Brodeur Peninsula
3-22
100.0
90.0

Regional Map 4 West - *Barrow Strait & Viscount Melville Sound*

Legend

*Offshore Sensitivity**
From Early October to Late December

- Extreme Sensitivity Ranking ≥ 31
- High Sensitivity Ranking 30-30.5
- Moderate Sensitivity Ranking 15-29
- Low Sensitivity Ranking < 15

* See Appendix A
See Operational Maps for Shoreline Sensitivity

Area

No.	Name	Sensitivity Ranking
403	Lancaster Sound	16.50
404	Admiralty Inlet	29.00
405	Barrow Strait	30.50
406	Prince Regent Inlet	30.50
407	Viscount Melville Sound	4.50

Greatest Importance R

Environmental Description

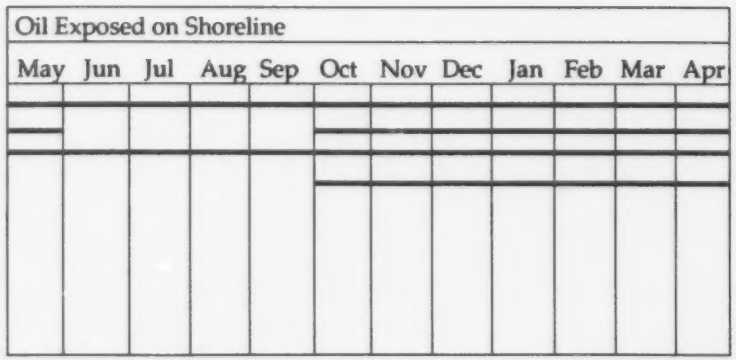
R 404 This area lies within the proposed North Baffin/ Lancaster Sound National Marine Park.

R 404 Seal hunting is reported to occur year-round in Admiralty Inlet. Arctic Bay residents hunt seals in the offshore at their breathing holes and near cracks in the ice. Polar bears are hunted in the Inlet from November to May 31, with the harvest concentrated adjacent to Adams and Strathcona Sounds (14).

R 405 Polar bears are hunted extensively in Wellington Channel, Barrow Strait, and McDougall Sound by Resolute Bay hunters between February and May. Numerous kills are reported along the ice edge adjacent to Cornwallis Island between Assistance and Allen Bay, in Resolute Passage, and south from Griffith Island to Somerset Island. Bear kills are reported along the coast of Somerset Island as far east as Cunningham Inlet. Seal hunting is very productive along the ice cracks during winter, particularly from the headlands at Cape Martyr and Sheringham Point to Griffith Island. Hunters from Resolute Bay will often hunt seals and polar bears at the same time. A year-round outpost camp is located at Back Bay. Resident hunters use the offshore area in the early winter for seal and polar bear hunting (56).

R 406 In early October, an ice edge forms offshore of the east coast of Somerset Island, from Elwin Bay and adjacent to Creswell Bay (43). By October, hunters from Creswell Bay may take polar bears at the floe edge. Seal hunting occurs offshore year-round. A year-round outpost camp is located adjacent to the area at Creswell Bay.

PB, RS Information on the winter abundance and distribution of resident species, such as the ringed seal and polar bear, is lacking or incomplete. Almost all aerial surveys have been conducted between May and October when many marine mammals migrate into the High Arctic. In general, ringed seals are widely dispersed in the areas of annual fast ice throughout the region. Similarly, their major predator, the polar bear is widely dispersed throughout the area, although they do tend to concentrate along flaw lead zones where hunting is apparently easier.



Occurrence of Species and Resource Use

R 404
R 405
R 406
PB, RS

Regional Map 4 East - *Lancaster Sound*

Legend

*Offshore Sensitivity**
From Early October to Late December

- Extreme Sensitivity Ranking ≥ 31
- High Sensitivity Ranking 30-30.5
- Moderate Sensitivity Ranking 15-29
- Low Sensitivity Ranking < 15

* See Appendix A
See Operational Maps for Shoreline Sensitivity

Area

No.	Name	Sensitivity Ranking
401	Baffin Bay	12.00
402	Navy Board & Pond Inlets	29.00
403	Lancaster Sound	16.50
404	Admiralty Inlet	29.00
405	Barrow Strait	30.50
406	Prince Regent Inlet	30.50

Greatest Importance R

Environmental Description

R 401-404 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park.

R 403 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.

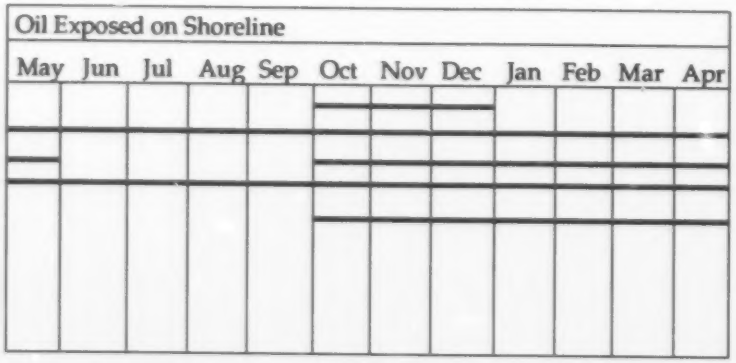
R 402 The first sea ice allows for travel to caribou hunting areas in the southwest near Tay Inlet. Pond Inlet hunters take seals near their breathing holes on the sea ice in the early winter throughout Eclipse Sound and Navy Board Inlet. The harvest is concentrated adjacent to Kounuk and at the Button Point floe edge during the early winter ice cover period. During the open water period (from August to October), seal hunting is reported mainly in the offshore near the community of Pond Inlet, offshore Kounuk, and at the mouth of Tremblay Sound. Polar bears are also hunted in the area, with concentrations of hunter kills at the floe edge near Button Point and along the north coast of Bylot Island.

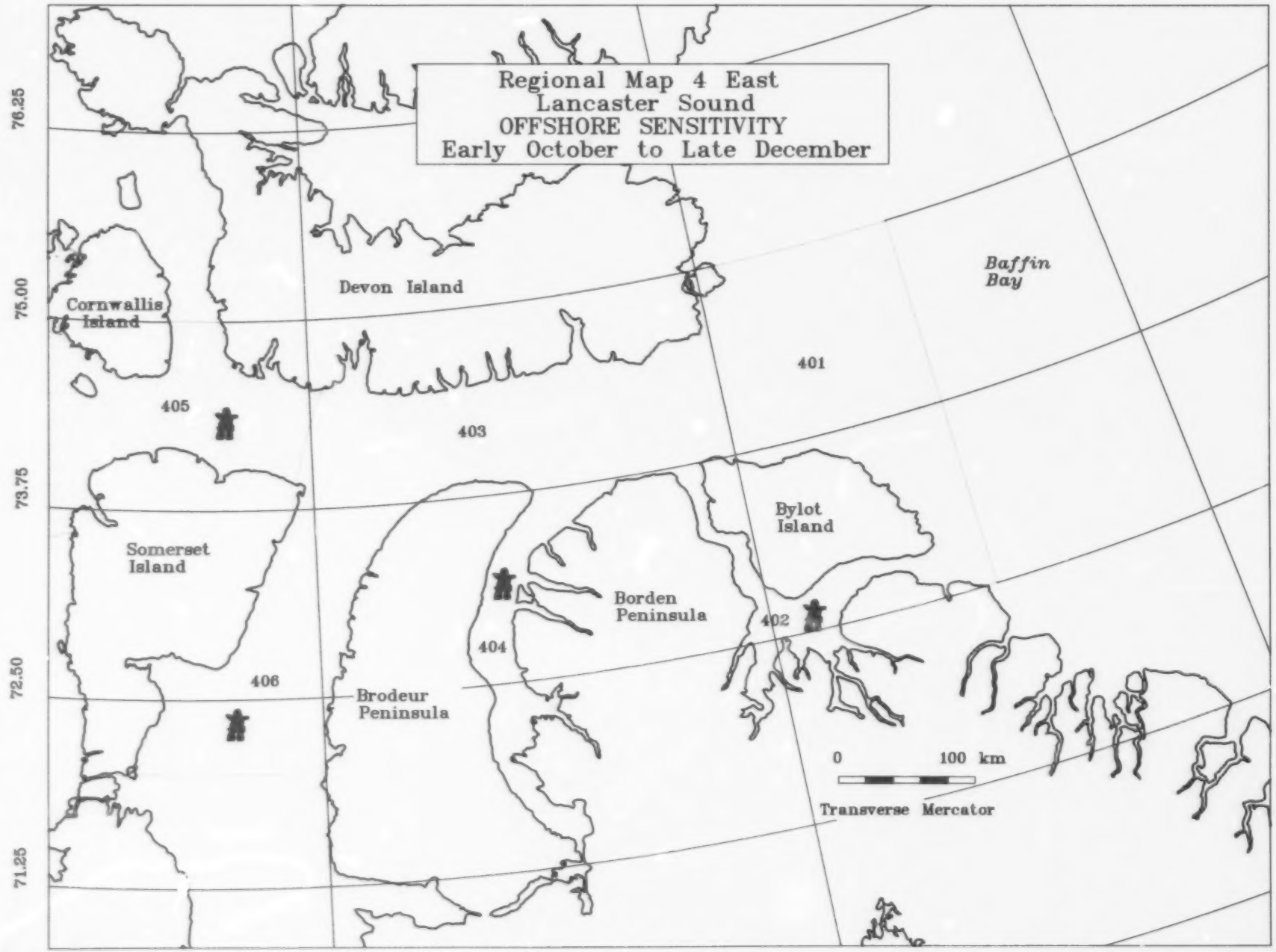
R 404 Seal hunting is reported to occur year-round in Admiralty Inlet. Arctic Bay residents hunt seals in the offshore at their breathing holes and near cracks in the ice. Polar bears are hunted in the Inlet from November to May 31, with the harvest concentrated adjacent to Adams and Strathcona Sounds (14).

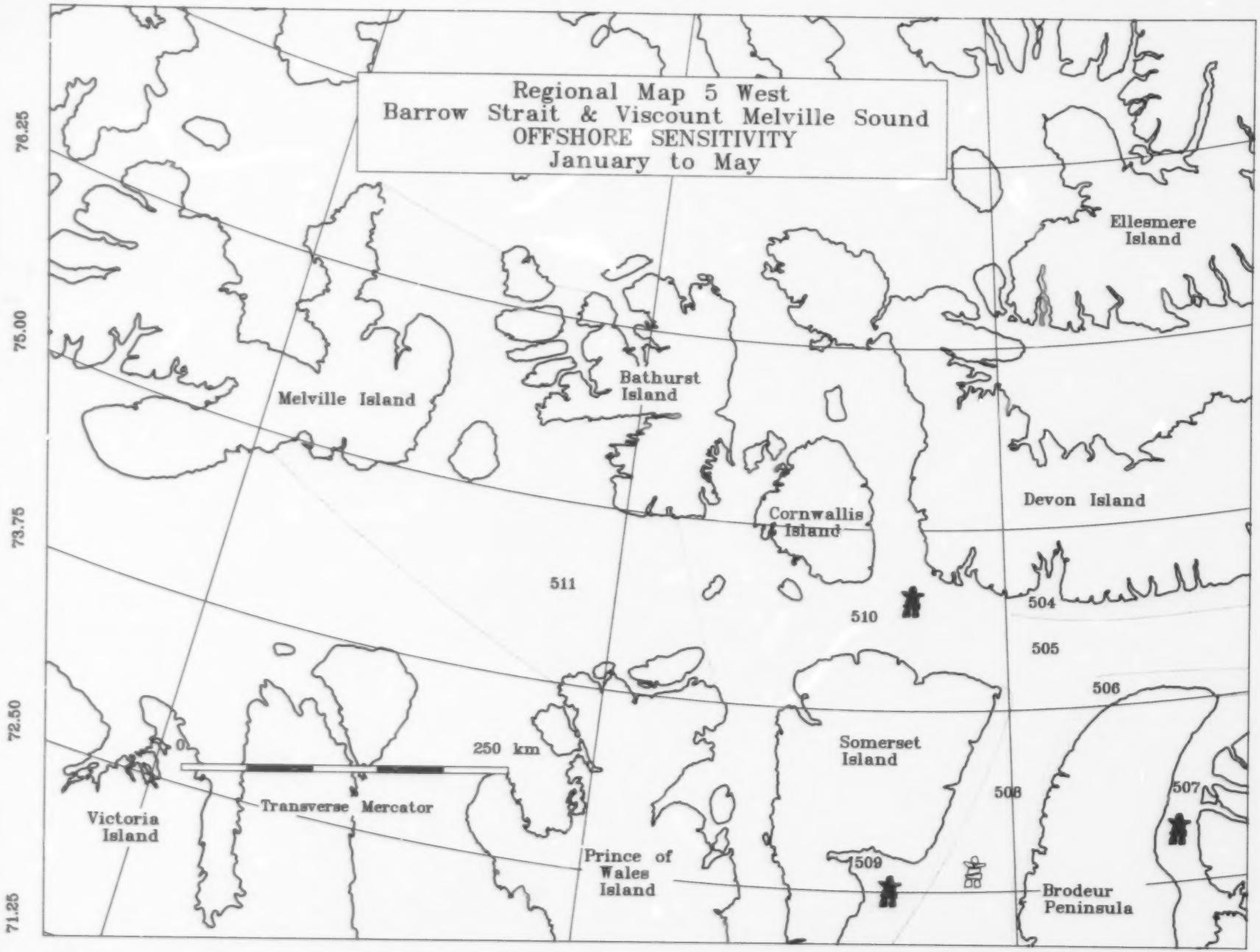
R 405 Polar bears are hunted extensively in Wellington Channel, Barrow Strait, and McDougall Sound by Resolute Bay hunters between February and May. Numerous kills are reported along the ice edge adjacent to Cornwallis Island between Assistance and Allen Bay, in Resolute Passage, and south from Griffith Island to Somerset Island. Bear kills are reported along the coast of Somerset Island as far east as Cunningham Inlet. Seal hunting is very productive along the ice cracks during winter, particularly from the headlands at Cape Martyr and Sheringham Point to Griffith Island. Hunters from Resolute Bay will often hunt seals and polar bears at the same time. A year-round outpost camp is located at Back Bay. Resident hunters use the offshore area in the early winter for seal and polar bear hunting (56).

R 406 In early October, an ice edge forms offshore of the east coast of Somerset Island, from Elwin Bay and adjacent to Creswell Bay (43). By October, hunters from Creswell Bay may take polar bears at the floe edge. Seal hunting occurs offshore year-round. A year-round outpost camp is located adjacent to the area at Creswell Bay.

PB, RS Information on the winter abundance and distribution of resident species, such as the ringed seal and polar bear, is lacking or incomplete. Almost all aerial surveys have been conducted between May and October when many marine mammals migrate into the High Arctic. In general, ringed seals are widely dispersed in the areas of annual fast ice throughout the region. Similarly, their major predator, the polar bear is widely dispersed throughout the area, although they do tend to concentrate along flaw lead zones where hunting is apparently easier.




Regional Map 4 East
Lancaster Sound
OFFSHORE SENSITIVITY
Early October to Late December
76.25
75.00
73.75
72.50
71.25
90.0
80.0
Devon Island
Cornwallis Island
Baffin Bay
401
405
403
Somerset Island
Bylot Island
Borden Peninsula
402
404
406
Brodeur Peninsula
0
100 km
Transverse Mercator


Regional Map 5 West
Barrow Strait & Viscount Melville Sound
OFFSHORE SENSITIVITY
January to May
76.25
75.00
73.75
72.50
71.25
Ellesmere Island
Bathurst Island
Melville Island
Cornwallis Island
Devon Island
511
510
504
505
506
507
508
509
Somerset Island
0
250 km
Transverse Mercator
Victoria Island
Prince of Wales Island
Brodeur Peninsula
3-26
100.0
90.0

Regional Map 5 West - *Barrow Strait & Viscount Melville Sound*

Legend

*Offshore Sensitivity**
From January to Early May

- Extreme Sensitivity Ranking ≥ 31
- High Sensitivity Ranking 30-30.5
- Moderate Sensitivity Ranking 15-29
- Low Sensitivity Ranking < 15

* See Appendix A
See Operational Maps for Shoreline Sensitivity

Area

No.	Name	Sensitivity Ranking
504	Northern Lancaster Sound	31.00
505	Central Lancaster Sound	16.50
506	Southern Lancaster Sound	31.00
507	Admiralty Inlet	29.00
508	Central Prince Regent Inlet	23.50
509	Western Prince Regent Inlet	30.50
510	Barrow Strait	24.50
511	Viscount Melville Sound	4.50

Greatest Importance R

Highly Important R

Important R

Environmental Description

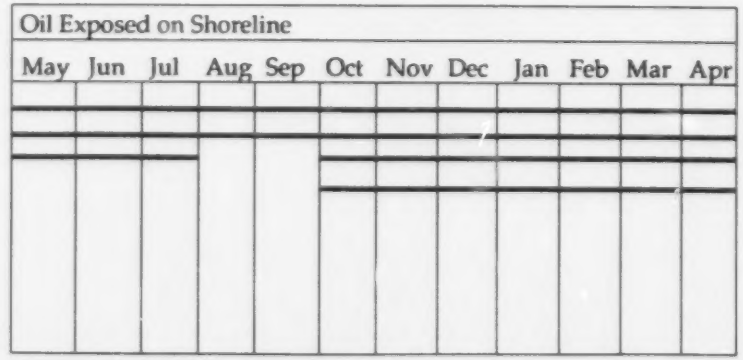
R 504-507 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park.

R 505 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.

R 508 Resolute Bay and Arctic Bay hunters use Prince Regent Inlet adjacent to the coastline for seal hunting year-round. The range of offshore use varies depending on the hunting technique. Hunting for seals at their breathing holes and cracks in the ice can occur in the offshore regions and may be accompanied by polar bear hunting during the winter season. Polar bear hunter harvests have been recorded offshore of Brodeur Peninsula (31).

R 509 Residents of Resolute Bay hunt polar bears north and east of Somerset Island in Barrow Strait and Prince Regent Inlet, and hunt seals in Prince Regent Inlet adjacent to the coastline year-round. The range of offshore use varies depending on the hunting technique. Hunting for seals at their breathing holes and at cracks in the ice can occur in the offshore regions and may be accompanied by polar bear hunting during the winter season. Creswell Bay hunters have a polar bear quota. The harvest usually occurs during the winter season (14, 44).

R 510 From October 1 to May 31, polar bears are taken in both the sport and domestic harvest by residents of Resolute Bay along the floe edge, which extends offshore from Cape Hotham on Cornwallis Island to Innes Point on Devon Island (22). Ringed seals are usually hunted closer to Resolute Bay during the winter months, where they are taken at their breathing holes and/or at cracks in the ice between Griffith and Cornwallis Islands in Resolute Passage (14). In late winter, floe edge hunting becomes more important, particularly at Cheyne Point and along the southeast coast of Cornwallis Island. During the haul-out in spring, seal hunting is productive in Resolute Passage and Fournier Channel. A main travel route from Resolute Bay to Somerset Island for caribou and polar bear hunting and for access to the Creswell Bay (Kuganayuk) outpost camp is along the south coastal region of Griffith Island from Cheyne Point west and then south. The route extends south across Barrow Strait to the coast of Somerset Island in Prince Regent Inlet. From November to June and July, travel occurs by snowmobile (73). Concentrations of polar bear kills have been reported in the area south of Resolute Bay to Somerset Island (32). Resolute Bay hunters use this region of Barrow Strait and Peel Sound to the south to hunt polar bear (56). Approximately 75% of their kills are made in this area. McDougall Sound is important to Resolute Bay hunters during March and April. Occasionally, ringed and bearded seals are taken along the ice cracks during winter (14). Some hunters from Resolute Bay use Crozier Strait for polar bear hunting (14). However, virtually all Resolute Bay hunters hunt along the floe edge in Peel Sound adjacent to Back Bay, Edgeworth Island, and Cape Hardy during March to May (22). Polar bears and seals are taken at the floe edge. During February to May, seals are taken at their



Occurrence of Species and Resource Use

R 508
R 509
R 510
PE, RS

breathing holes and cracks in the ice in Peel Sound and Barrow Strait adjacent to the coast of Somerset Island (14). Other than Resolute Bay hunters traveling to Melville Island every second year to hunt polar bears, the area west of Bathurst Island is a low use area. A year-round occupied outpost camp is located at Back Bay on Prince of Wales Island. Resident hunters use the offshore extensively for hunting seal and polar bear (56).

PB, RS Information on the winter abundance and distribution of resident species, such as the ringed seal and polar bear, is lacking or incomplete. Almost all aerial surveys have been conducted between May and October when many marine mammals migrate into the High Arctic. In general, ringed seals are widely dispersed in the areas of annual fast ice throughout the region. Similarly, their major predator, the polar bear is widely dispersed throughout the area, although they do tend to concentrate along flaw lead zones where hunting is apparently easier.

Regional Map 5 East - *Lancaster Sound*

Environmental Description

R 501-507 These areas lie within the proposed North Baffin/Lancaster Sound National Marine Park.

R 505 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes, and guillemots that nest in the area.

R 502 The fast ice edge extends north in Baffin Bay past Button Point and follows the coastline of Bylot Island into Lancaster Sound. Polar bears and ringed seals are hunted by Pond Inlet residents at the floe edge by Button Point, at the mouth of Navy Board Inlet, and along the Bylot Island coastline during winter and spring (43). Hunting for polar bears takes place primarily from January to March (14, 31). Reported ringed seal kills are concentrated north of the Button Point floe edge from February to May (6).

R 503 From November to January, intensive seal hunting occurs closer to the community of Pond Inlet and Kounuk. Ringed seals are taken on the sea ice at their breathing holes (6). Polar bears are hunted primarily at the floe edges at Button Point and the mouth of Navy Board Inlet.

R 504 Polar bear domestic and sport hunting is reported along the Devon Coast, particularly in the Dundas Harbour, Croker Bay, and Radstock Bay area (56).

R 506 During winter, residents of Arctic Bay hunt polar bears and seals along the coast of Prince Regent Inlet, the north coast of Brodeur Peninsula, and the north coast of Borden Peninsula (31, 32). Seal hunting occurs throughout the region in conjunction with polar bear hunting.

R 507 Polar bears and seals are hunted extensively in Admiralty Inlet by residents of Arctic Bay (14). Polar bear harvests have been recorded in this region, primarily adjacent to Adams Sound and Strathcona Sound (32).

R 508 Resolute Bay and Arctic Bay hunters use Prince Regent Inlet adjacent to the coastline for seal hunting year-round. The range of offshore use varies depending on the hunting technique. Hunting for seals at their breathing holes and cracks in the ice can occur in the offshore regions and may be accompanied by polar bear hunting during the winter season. Polar bear hunter harvests have been recorded offshore of Brodeur Peninsula (31).

R 509 Residents of Resolute Bay hunt polar bears north and east of Somerset Island in Barrow Strait and in Prince Regent Inlet, and hunt seals in Prince Regent Inlet adjacent to the coastline year-round. The range of offshore use varies depending on the hunting technique. Hunting for seals at their breathing holes and at cracks in the ice can occur in the offshore regions and may be accompanied by polar bear hunting during the winter season. Creswell Bay hunters have a polar bear quota. The harvest usually occurs during the winter season.

R 510 During the winter period polar bears are taken in both the sport and domestic harvest by residents of Resolute Bay along the floe edge, which extends offshore from Cape Hotham on Cornwallis Island to Innes Point on Devon Island (22). Ringed seals are usually hunted closer to Resolute Bay during the winter months, where they are taken at their

Legend

*Offshore Sensitivity**
From January to Early May

- Extreme Sensitivity Ranking ≥ 31
- High Sensitivity Ranking 30-30.5
- Moderate Sensitivity Ranking 15-29
- Low Sensitivity Ranking < 15

* See Appendix A
See Operational Maps for Shoreline Sensitivity

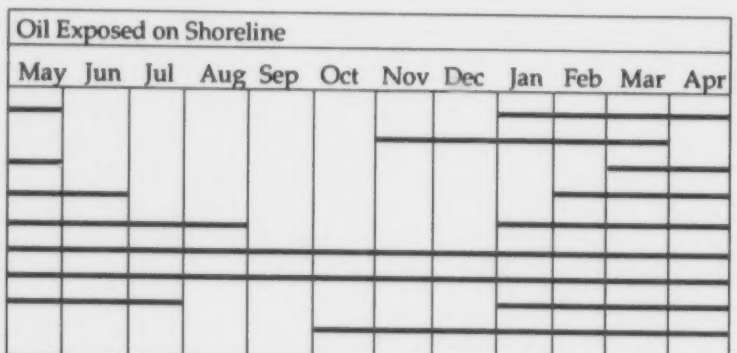
Area

No.	Name	Sensitivity Ranking
501	Baffin Bay	9.00
502	Northen Coast of Bylot Island	30.00
503	Navy Board & Pond Inlets	29.00
504	Northern Lancaster Sound	31.00
505	Central Lancaster Sound	16.50
506	Southern Lancaster Sound	31.00
507	Admiralty Inlet	29.00
508	Central Prince Regent Inlet	23.50
509	Western Prince Regent Inlet	30.50
510	Barrow Strait	24.50

Greatest Importance R

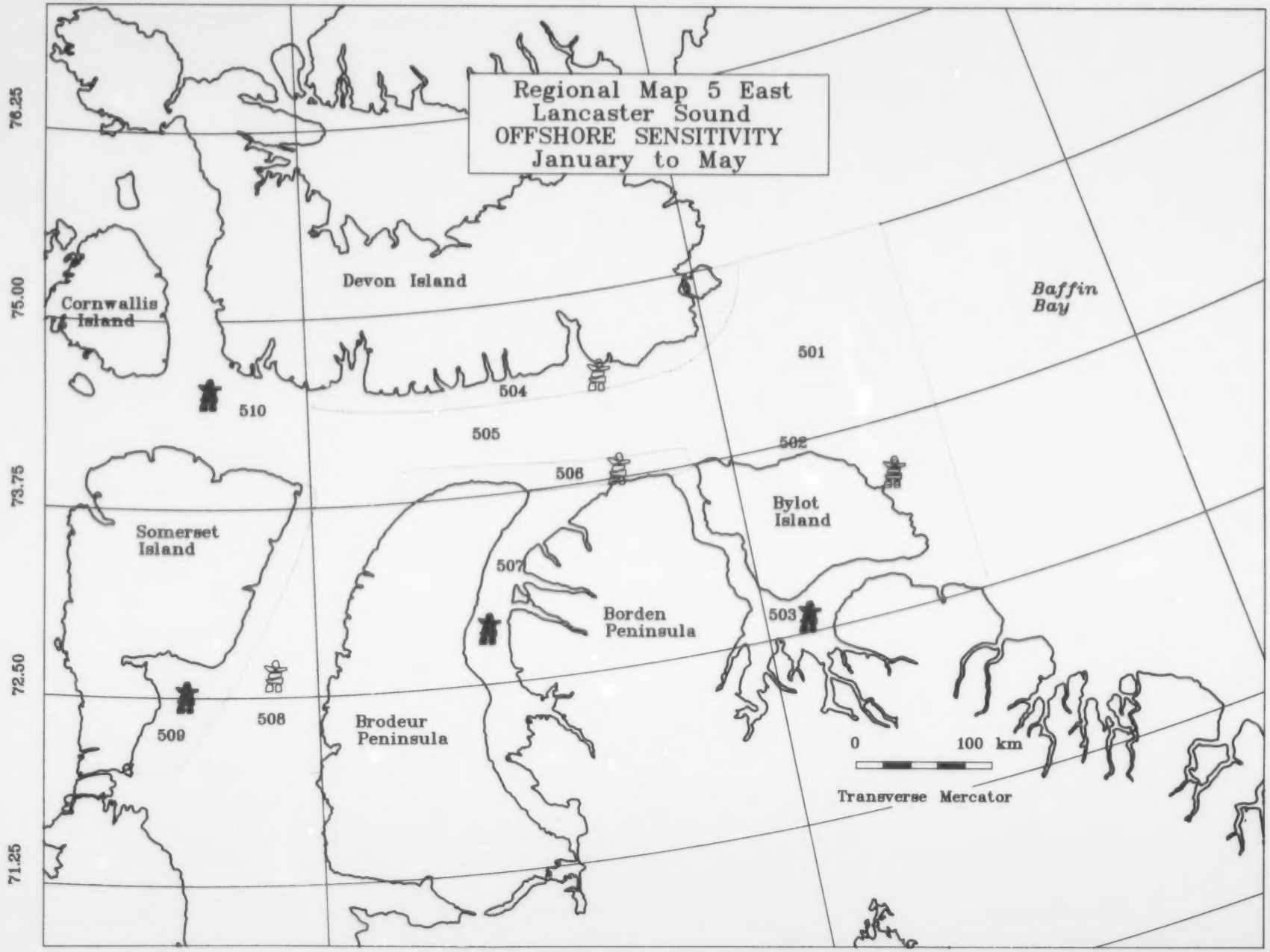
Highly Important R

Important R



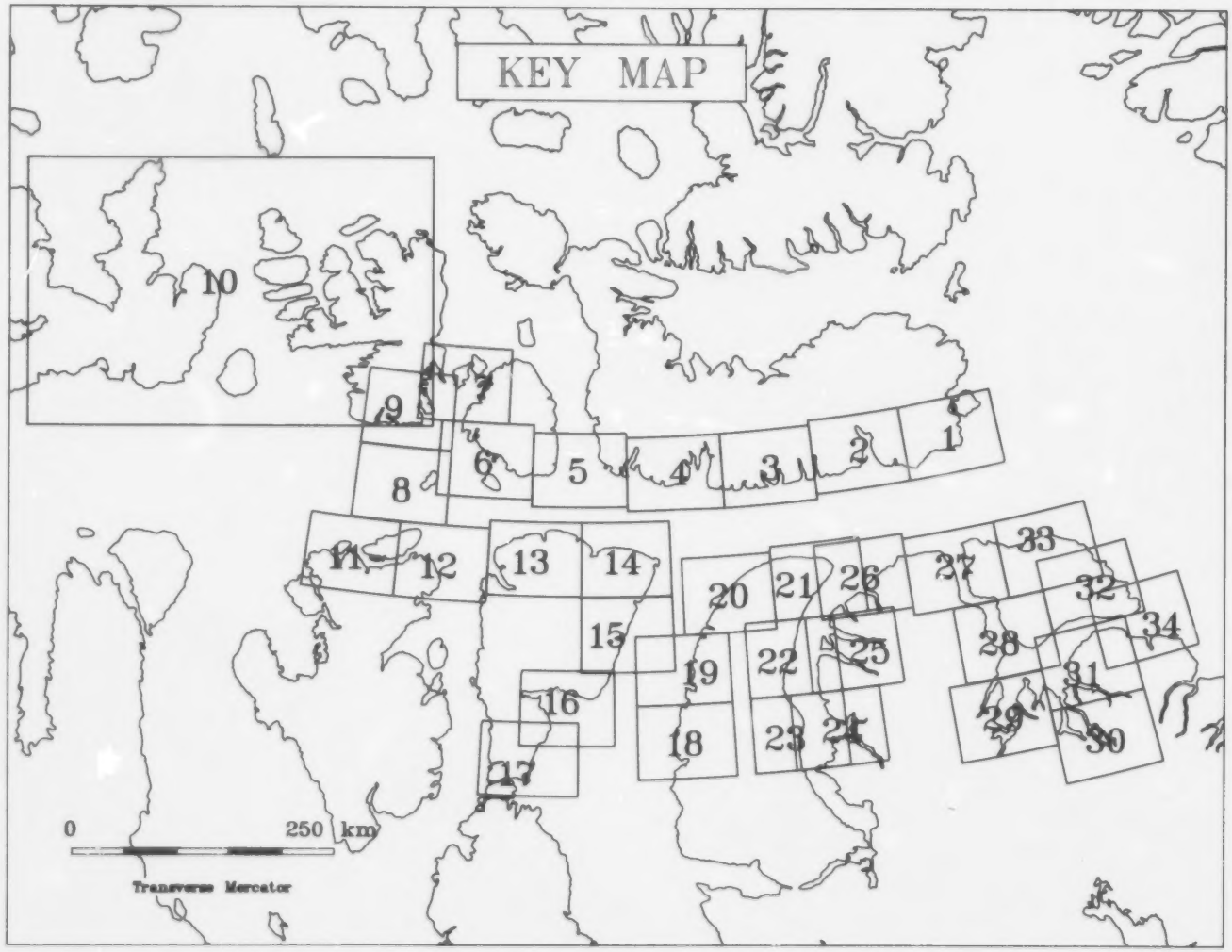
Occurrence of Species and Resource Use

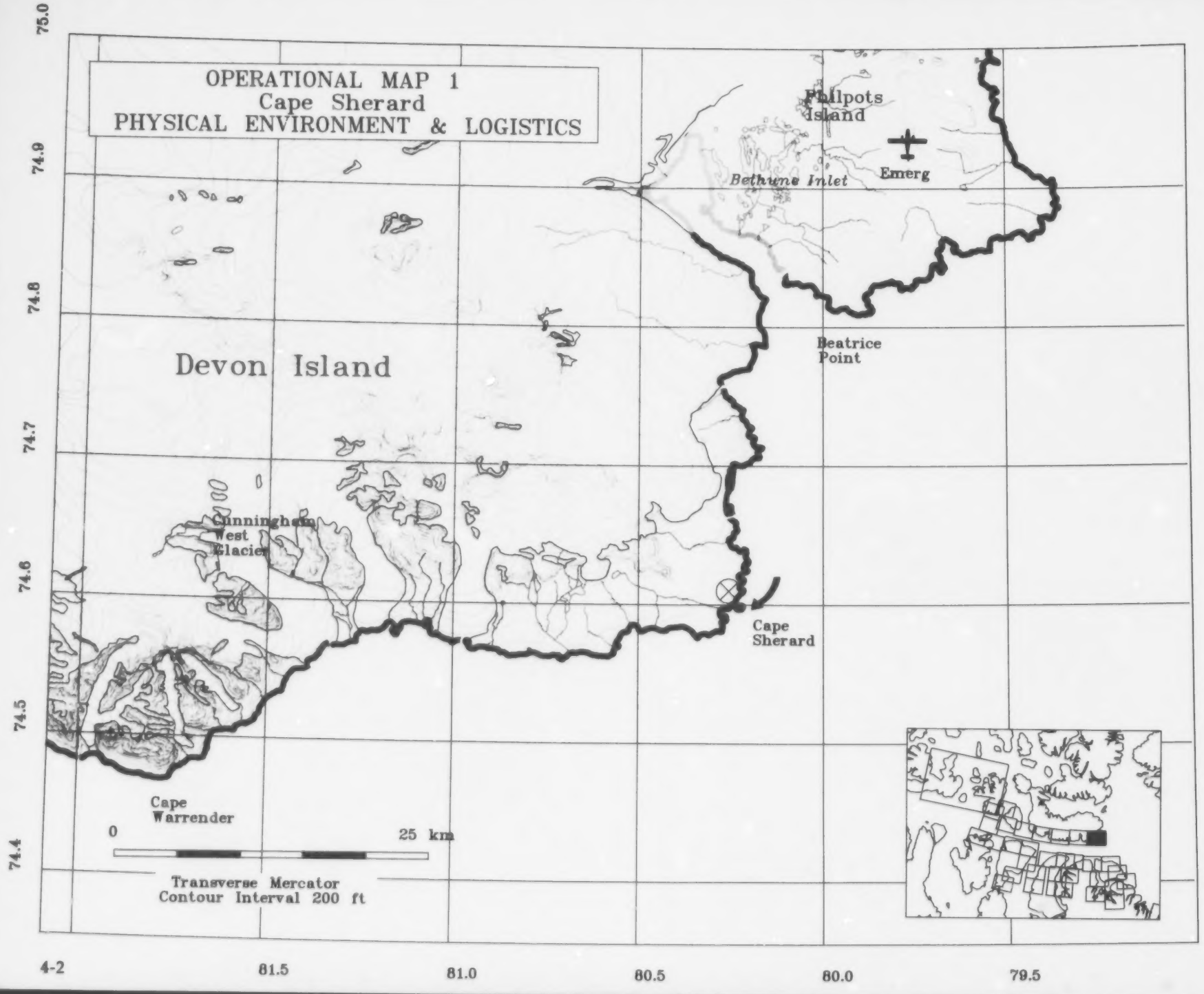
R 502
R 503
R 504
R 506
R 507
R 508
R 509
R 510
PB, RS


Regional Map 5 East
Lancaster Sound
OFFSHORE SENSITIVITY
January to May
76.25
75.00
73.75
72.50
71.25
90.0
80.0
Devon Island
Cornwallis Island
Baffin Bay
501
504
510
505
502
506
Bylot Island
Somerset Island
507
Borden Peninsula
503
509
508
Brodeur Peninsula
0
100 km
Transverse Mercator

breathing holes and/or at cracks in the ice between Griffith and Cornwallis Islands in Resolute Passage (14). In late winter, floe edge hunting becomes more important, particularly at Cheyne Point and along the southeast coast of Cornwallis Island. During the haul-out in spring, seal hunting is productive in Resolute Passage and Fournier Channel. A main travel route from Resolute Bay to Somerset Island for caribou and polar bear hunting and for access to the Creswell Bay (Kuganayuk) outpost camp is along the south coastal region of Griffith Island from Cheyne Point west and then south. The route extends south across Barrow Strait to the coast of Somerset Island in Prince Regent Inlet. From November to June and July, travel occurs by snowmobile (73). Concentrations of polar bear kills have been reported in the area south of Resolute Bay to Somerset Island. The offshore area is adjacent to Resolute Bay and used extensively for hunting purposes by Resolute Bay residents.

PB, RS Information on the winter abundance and distribution of resident species, such as the ringed seal and polar bear, is lacking or incomplete. Almost all aerial surveys have been conducted between May and October when many marine mammals migrate into the High Arctic. In general, ringed seals are widely dispersed in the areas of annual fast ice throughout the region. Similarly, their major predator, the polar bear is widely dispersed throughout the area, although they do tend to concentrate along flaw lead zones where hunting is apparently easier.


KEY MAP
10
9
8
6
5
4
3
2
1
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
0
250 km
Transverse Mercator


OPERATIONAL MAP 1
Cape Sherard
PHYSICAL ENVIRONMENT & LOGISTICS
Philpots Island
Emerg
Bethune Inlet
Beatrice Point
Devon Island
Cunningham West Glacier
Cape Sherard
Cape Warrender
0
25 km
Transverse Mercator
Contour Interval 200 ft
75.0
74.9
74.8
74.7
74.6
74.5
74.4
4-2
81.5
81.0
80.5
80.0
79.5

Operational Map 1 - *Cape Sherard*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 1
Topographic Map - 48E
Hydrographic Chart - 7220
Video Tapes (reference number) - none

ACCESS

Most of the inshore waters in this area have not been surveyed, and mariners should exercise due caution. Foul ground extends off Cape Horsburgh and the coast to southward for three-to-four miles, and there is shoaling off the south coast of Philpots Island (vicinity of De Ros Islands). Depths of under 20 m lie within 1.5 km of shore near Cape Sherard; an uncharted shoal is reported 10 km WSW of the cape. Landing with small boats may be possible at the sandy beach on the east side of Cape Sherard or in the small bay just west of the cape. Very limited access is available along the rest of the shoreline in this area.

A natural-surface runway (1580 m x 15 m; emergency status) exists on Philpots Island.

COUNTERMEASURES

In-situ burning of oil in ice, in conjunction with tracking oiled ice, in offshore and nearshore waters in ice concentrations of 6 tenths or greater is recommended. In open water conditions, containment for recovery or burning and/or dispersant application is recommended. Containment operations may be complicated by drifting ice floes and the strong surface current (25 cm/s mean, up to 75 cm/s in summer) which sets to the WSW near the coast, turning to south and then east through Lancaster Sound. Dispersants should not be considered in the protected waters around Philpots Island due to their importance as beluga feeding grounds. All efforts should be made to prevent oil from reaching the highly sensitive coastal zone, as the shoreline offers poor access and may be difficult to clean if heavily oiled.

The highly exposed shoreline in this area may not require active cleaning if not heavily oiled. Priority areas for cleaning should be selected in conjunction with coastal habitat experts on the basis of real-time rather than historical data. Beaches in the vicinity of Cape Sherard should be investigated for possible use as sites for temporary storage and debris incineration.

SAFE HAVENS

No potential sites were identified in this area; the closest site is Cuming Inlet (Map 2) 100 km west of Cape Warrender.

Operational Map 1 - *Cape Sherard*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
1	Philpots Island	101.30
2	Bethune Inlet	125.40
3	Cape Sherard	121.70
4	Cape Warrender	116.50

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Beluga Be
- Walrus Wa
- Polar Bear PB
- Harp Seal HS
- Bearded Seal BS
- Fulmer Fu
- Gull Gu
- Sea Duck Colony SD

Environmental Description

R 1-4 These areas lie within the proposed North Baffin/ Lancaster Sound National Park (16). There are numerous sites of archaeological importance along the coast in Areas 3 to 5.

Be 1-4 From mid-May to late July, thousands of belugas migrate along the coastal ice edge into Lancaster Sound (35, 40, 41, 59). Peak migration occurs in mid-July. During September, thousands of belugas migrate along the Devon Island coast out of Lancaster Sound (35, 40, 41) and large feeding aggregations have often been observed in Bethune Inlet.

Wa 1-4 From mid-May to late July, hundreds of walruses migrate along the coastal ice edge into Lancaster Sound and many remain throughout the summer along the south coast of Philpots Island (35, 40, 41).

PB 1-4 Major concentrations of polar bears occur along the southeast coast of Devon Island in spring and early summer (35, 40, 41, 62). Notable concentrations occur along the floe edge along Philpots Island (41, 62).

HS 2 Large feeding aggregations of harp seals occur in Bethune Inlet during September (40, 41).

BS 2, 4 Relatively high densities of bearded seals occur in late summer and fall along the southeast Devon Island coast, particularly along glacier fronts (41).

Fu 1-4 From early August to mid-September, thousands of fulmars occur along the coast from Cape Warrender to Philpots Island (36, 50, 52). Over 10,000 were counted on a single survey of this area in late August 1978 (52).

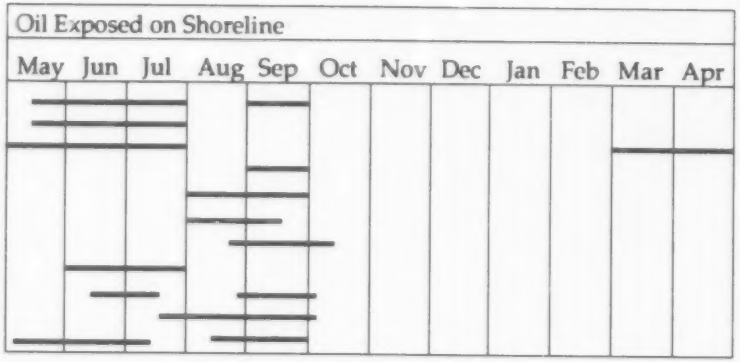
Gu 2 The massive glacier fronts in Bethune Inlet attract a variety of seabirds in late summer once the fast ice disappears. From late August to mid-October, thousands of kittiwakes (200/km2) and hundreds of glaucous gulls frequent the glacier front (36, 52). Hundreds of ivory gulls appear in mid-September and stay until mid-October (58).

Gu 3 A small colony (<100) of Arctic terns nests on offshore islets along the coast west of Cape Sherard (36).

Gu 3, 4 From mid-June to mid-July and from late August to early October, thousands of kittiwakes occur along the south coast of Devon Island from Philpots Island to Croker Bay (36, 50, 52).

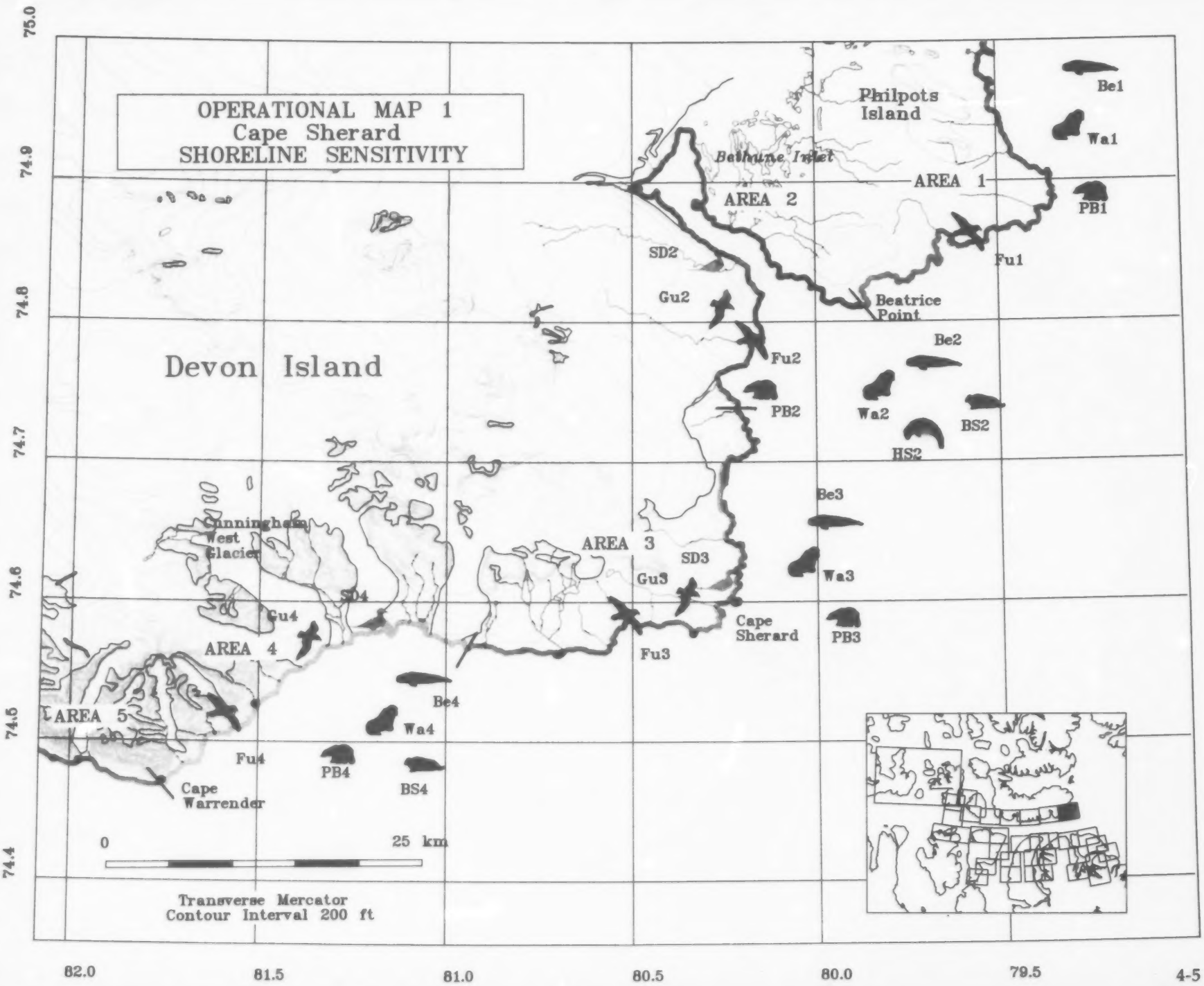
Gu 4 From mid-July to early October, thousands of glaucous gulls are found at the Cunningham West glacier front in this area (36).

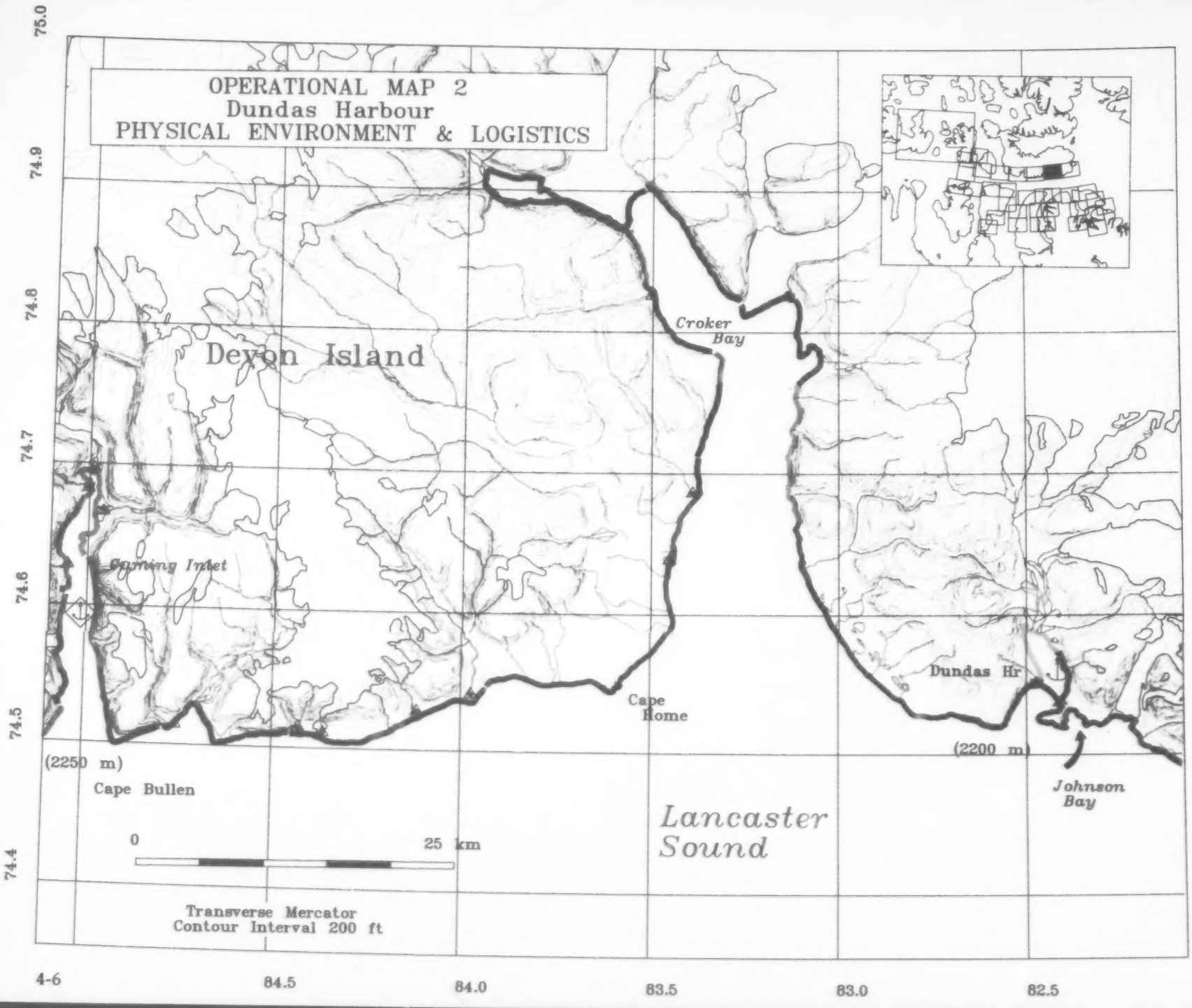
SD 2-4 From early May to mid-July, thousands of eiders and oldsquaws occur along the fast ice edge along this coast, principally at Cape Sherard and Cape Warrender (36, 50, 52). Oldsquaws are common during mid-August to late September (36, 52).



Occurrence of Species and Resource Use

Be 1-4
Wa 1-4
PB 1-4
HS 2
BS 2, 4
Fu 1-4
Gu 2
Gu 3
Gu 3-4
Gu 4
SD 2-4


OPERATIONAL MAP 1
Cape Sherard
SHORELINE SENSITIVITY
Philpots Island
Be1
Wa1
Bathurst Inlet
AREA 1
AREA 2
PB1
SD2
Fu1
Gu2
Beatrice Point
Be2
Devon Island
Fu2
PB2
Wa2
BS2
HS2
Be3
Cunningham West Glacier
AREA 3
SD3
Gu3
Wa3
SD4
Gu4
Cape Sherard
PB3
AREA 4
Fu3
Be4
AREA 5
Wa4
Fu4
PB4
BS4
Cape Warrender
0
25 km
Transverse Mercator
Contour Interval 200 ft
75.0
74.9
74.8
74.7
74.6
74.5
74.4
82.0
81.5
81.0
80.5
80.0
79.5


OPERATIONAL MAP 2
Dundas Harbour
PHYSICAL ENVIRONMENT & LOGISTICS
Devon Island
Croker Bay
Canning Inlet
Cape Home
Dundas Hr
(2200 m)
(2250 m)
Cape Bullen
Johnson Bay
Lancaster Sound
0
25 km
Transverse Mercator
Contour Interval 200 ft
75.0
74.9
74.8
74.7
74.6
74.5
74.4
4-6
84.5
84.0
83.5
83.0
82.5

Operational Map 2 - *Dundas Harbour*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 1
Topographic Map - 48E, 48F
Hydrographic Chart - 7220, 7292,7568
Video Tapes (reference number) - none

ACCESS

Dundas Harbour is sometimes used as an anchorage for vessels supporting resupply operations; anchorage in 58.5 m (gravel) may be obtained. Caution should be exercised as depths are irregular in the outer harbour. There is a landing beach in the south-east part of the harbour. Small craft may also be landed in Johnson Bay just east of Dundas Harbour. Although Dundas Harbour is generally ice-free from July through September, ice from Lancaster Sound may enter at any time. Disturbance of beach areas should be minimized as the areas contain a large number of archaeological sites.

Croker Bay would afford good protection from weather and has mid-channel depths that generally exceed 200 m. The north part of the bay is not sounded, and two glaciers near the head of the bay discharge a considerable number of icebergs. Beach access and shore operations may be possible on the lowlands on each side of the entrance to Croker Bay. Near Cape Home and about 35 km westward, a shelf of shallow water extends up to 3 km offshore.

Just west of Cape Bullen, anchorage may be obtained within Cuming Inlet; shoal water on both sides of the inlet should be noted.

COUNTERMEASURES

Every effort should be made to prevent oil from reaching the highly sensitive coastline in this area, and particularly the protected and important waters of Croker Bay and Dundas Harbour.

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore waters, containment for recovery or burning is recommended. Dispersant application may be ecologically justified in offshore and nearshore waters, but should not be considered in the protected inshore waters that are noted as important beluga feeding areas.
Dundas Harbour (2200 m) could be sealed using exclusion booming techniques to prevent oil from entering. Croker Bay is too wide for exclusion booming, but could be somewhat protected by diverting incoming oil onto raised beaches at its entrance.

Exposed cliff and raised beach shorelines, which predominate this area, may not require active cleaning efforts particularly if they are not heavily oiled. Priorities for shoreline cleanup are likely to include the protected waters of Croker Bay and Dundas Harbour; care must be taken not to disturb the high number of archaeological sites in both areas. Dundas Harbour may be suitable as a staging location, and for the temporary storage and subsequent incineration of debris; the lowlands on each side of the entrance to Croker Bay could also be considered for shore operations. Expert advice should be sought with respect to the specific location and sensitivity of archaeological sites.

SAFE HAVENS

The best candidate site for vessel lightering and/or stabilization operations is Cuming Inlet. Although depths are not charted for the head of the inlet, anchorage has been reported about 15 km within the entrance. Exclusion booming (2250 m width) could be used to trap oil within the upper reach of the inlet.

Operational Map 2 - *Dundas Harbour*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
5	Dundas Harbour	137.80
6	Croker Bay	122.40
7	Cape Home	98.40
8	Powell Inlet	83.90

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Important R

Beluga Be

Walrus Wa

Polar Bear PB

Harp Seal HS

Fulmer Fu

Gull Gu

Goose Ge

Sea Duck SD

Environmental Description

R 5-8 This stretch of coastline is of historical significance, particularly Croker Bay and Dundas Harbour where over 60 archaeological sites have been identified.

R 5, 6 Occasional whale and muskox hunting are reported in the Dundas Harbour and Croker Bay area during August and September; however, small boat crossings of Parry Channel are difficult. There is a cabin located in Dundas Harbour (56).

Be 5-7 From mid-May to late July, thousands of belugas migrate along the coastal ice edge into Lancaster Sound (35, 40, 41, 59). Peak migration occurs in mid-July. During September, thousands of belugas migrate along the Devon Island coast out of Lancaster Sound (35, 40, 41). Large feeding aggregations are often observed in Dundas Harbour and Croker Bay.

Wa 5-7 From mid-May to late July, hundreds of walruses migrate along the coastal ice edge into Lancaster Sound and many remain throughout the summer in Croker Bay and Dundas Harbour (35).

PB 5-7 Major concentrations of polar bears occur along the southeast coast of Devon Island in spring and early summer (35, 62). Notable concentrations occur along the floe edge across the mouth of Croker Bay.

HS 6 Large feeding aggregations of harp seals occur in Croker Bay during September (35).

Fu 5, 6 From mid-July to mid-September, thousands of fulmars occur from Cape Warrender to Croker Bay and along the ice edge across Croker Bay (36).

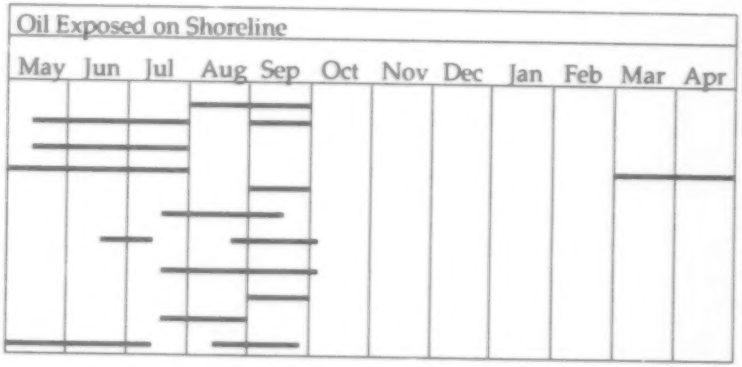
Gu 5, 6 From mid-June to mid-July and from late August to early October, thousands of kittiwakes occur along the south coast of Devon Island from Philpots Island to Croker Bay (36, 50, 52).

Gu 5 From mid-July to early October, hundreds of glaucous gulls are found in Dundas Harbour and east to Cape Warrender (36).

Gu 6 A colony of 40+ pairs of glaucous gulls nests in Croker Bay (53). Hundreds of glaucous gulls gather in Croker Bay in September (36).

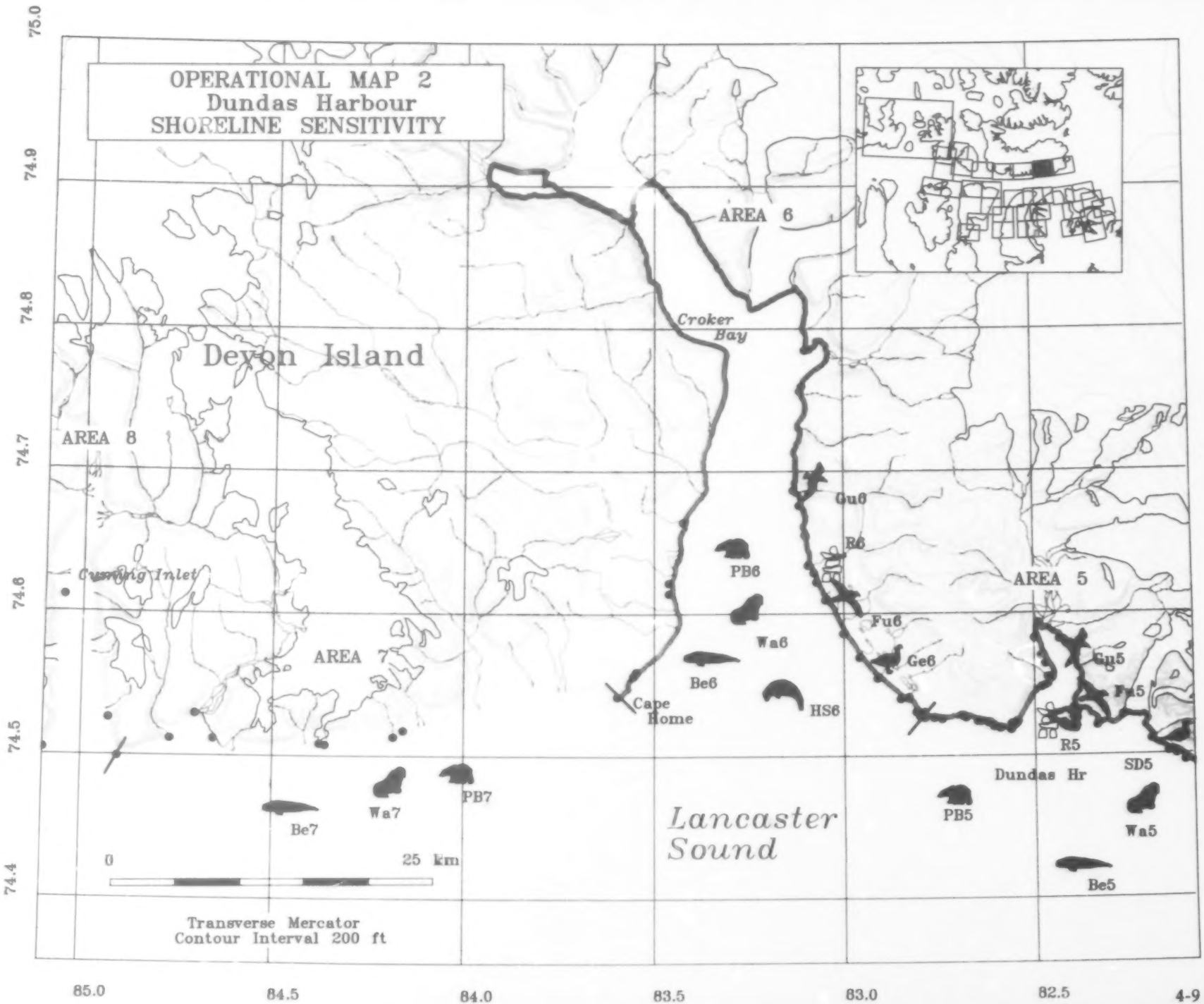
Ge 6 From mid-July until late August, hundreds of greater snow geese moult in the coastal waters of Croker Bay (36).

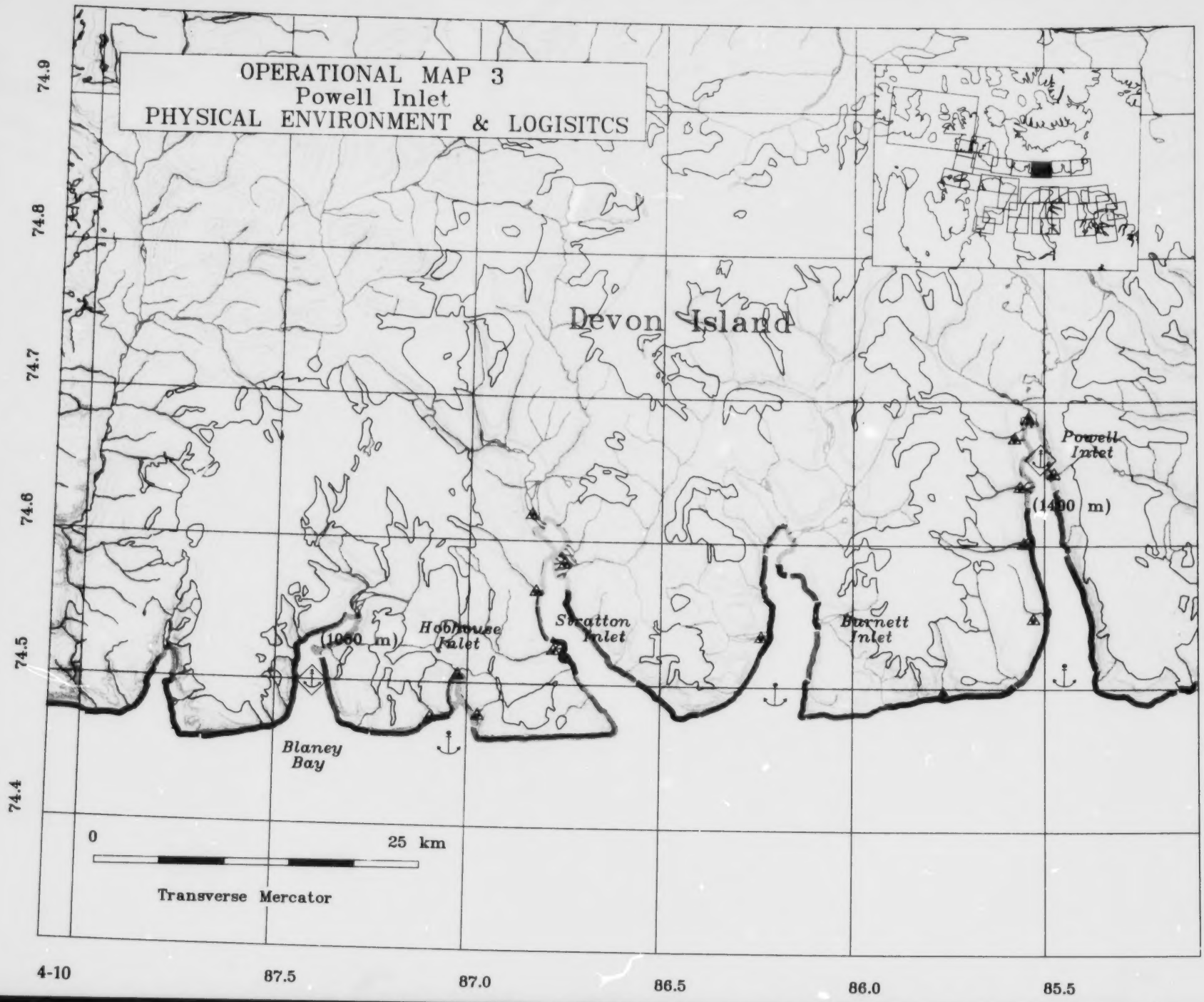
SD 5 From early May to mid-July, thousands of eiders and oldsquaws occur along the fast ice edge along this coast, principally at Cape Sherard and Cape Warrender (36, 50, 52). Oldsquaws are common during mid-August to late September (36, 52).



Occurrence of Species and Resource Use

R 5, 6
Be 5-7
Wa 5-7
PB 5-7
HS 6
Fu 5, 6
Gu 5, 6
Gu 5
Gu 6
Ge 6
SD 5


OPERATIONAL MAP 2
Dundas Harbour
SHORELINE SENSITIVITY
AREA 6
AREA 8
AREA 7
AREA 5
Devon Island
Croker Bay
Cumming Inlet
Cape Home
Lancaster Sound
Dundas Hr
PB6
Be6
Wa6
HS6
Fu6
Ge6
Cu6
R6
Cu5
Fu5
R5
SD5
Wa5
Be5
PB5
PB7
Wa7
Be7
0
25 km
Transverse Mercator
Contour Interval 200 ft
75.0
74.9
74.8
74.7
74.6
74.5
74.4
85.0
84.5
84.0
83.5
83.0
82.5


OPERATIONAL MAP 3
Powell Inlet
PHYSICAL ENVIRONMENT & LOGISITCS
Devon Island
Powell Inlet
(1400 m)
(1000 m)
Hobhouse Inlet
Stratton Inlet
Burnett Inlet
Blaney Bay
0
25 km
Transverse Mercator
74.9
74.8
74.7
74.6
74.5
74.4
4-10
87.5
87.0
86.5
86.0
85.5

Operational Map 3 - *Powell Inlet*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 1, Map 5
Topographic Map - 48F
Hydrographic Chart - 7220, 7503, 7568
Video Tapes (reference number) - none

ACCESS

This stretch of coastline is characterized by high cliffs usually fronted by a narrow foreshore that may allow small craft landing. A number of inlets may allow temporary anchorage and good shelter from all but southerly winds, and would be good locations from which to base marine operations.

In Powell Inlet, good shelter is available with mid-channel depths to 120 m. Beach access may be possible along the short stretches of coastal plain just west of Powell Inlet. Anchorage is available in Burnett Inlet in about 55 m (mud and pebbles) and in Hobhouse Inlet in 37 to 73 m.

This area is about 200 km from Resolute which could serve as a staging base for countermeasures operations.

COUNTERMEASURES

In-situ burning of oil in ice, in conjunction with tracking oiled ice, in offshore and nearshore waters in ice concentrations of 6 tenths or greater is recommended. In open water conditions, containment for recovery or burning is recommended. Dispersant use may be applicable in offshore areas; its use in inshore and protected waters is cautioned against due to possible impacts on beluga feeding areas.

Inlet widths are generally too great to consider exclusion booming; alternatively, diversion booming could be used to direct oil onto cliff and talus shorelines that border most inlet approaches.

Cliff shorelines, raised beaches, and talus coasts that are not heavily contaminated may not require active cleaning efforts. A number of archaeological sites have been identified in this area; care should be taken not to disturb these sites during any shore operations and expert archaeological advice should be sought. The generally high-relief coastline offers few opportunities for land-based operations, either debris storage or incineration, although the few noted coastal plain areas may have this potential.

SAFE HAVENS

Several inlets in this area offer the potential for use as safe havens, areas where vessel stabilization and/or lightering operations could be carried out. In particular, Powell Inlet (inlet width of 1400 m near its head) and Blanley Bay (1000 m) are strong possibilities as safe havens; in each of these, operations could be carried out at the head of the inlet/bay in order to maximize protection from weather and minimize containment boom requirements for exclusion booming.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 3 - *Powell Inlet*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
8	Powell Inlet	83.90
9	Burnett Inlet	95.00
10	Hobhouse Inlet	90.20
11	Fellfoot Point	80.60

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Beluga Be
- Polar Bear PB
- Fulmer Fu
- Gull Gu
- Fulmer Colony Fu

Environmental Description

R 8-11 Several archaeological sites have been identified along the coast of Areas 8 through 11.

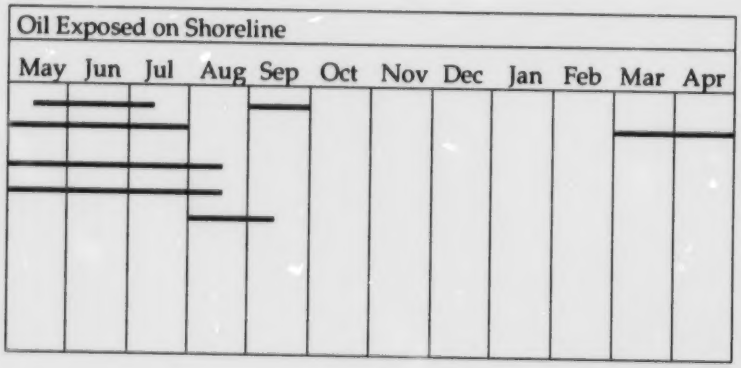
Be 8-10 From mid-May to mid-July, thousands of belugas migrate along the coastal ice edge of Devon Island into Lancaster Sound (35). During September, these whales migrate out of Lancaster Sound, closely following the Devon Island coast (35, 41). Large feeding aggregations have been observed in Cuming Inlet (41).

PB 8, 9 Polar bears concentrate along the coastal floe edge of south Devon Island from late winter into early summer (45, 62).

Fu 9 Areas 7 to 9 have not been systematically surveyed. However, because of its proximity to the Hobhouse Inlet fulmar colony, Area 9 is probably an important area for this species.

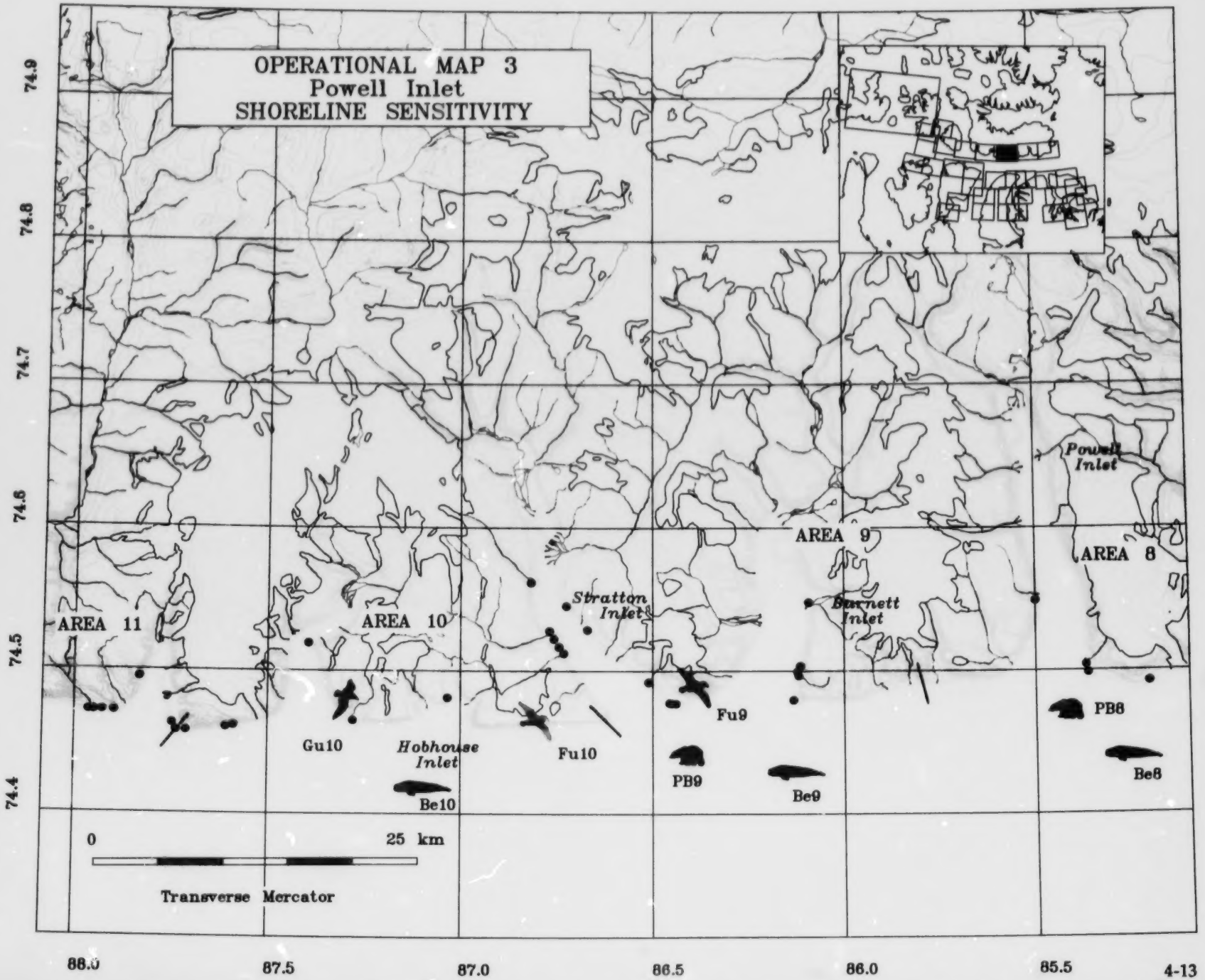
Fu 10 The largest fulmar colony in Parry Channel (75,000 pairs) nests on the cliffs between Hobhouse Inlet and Stratton Inlet (7, 53).

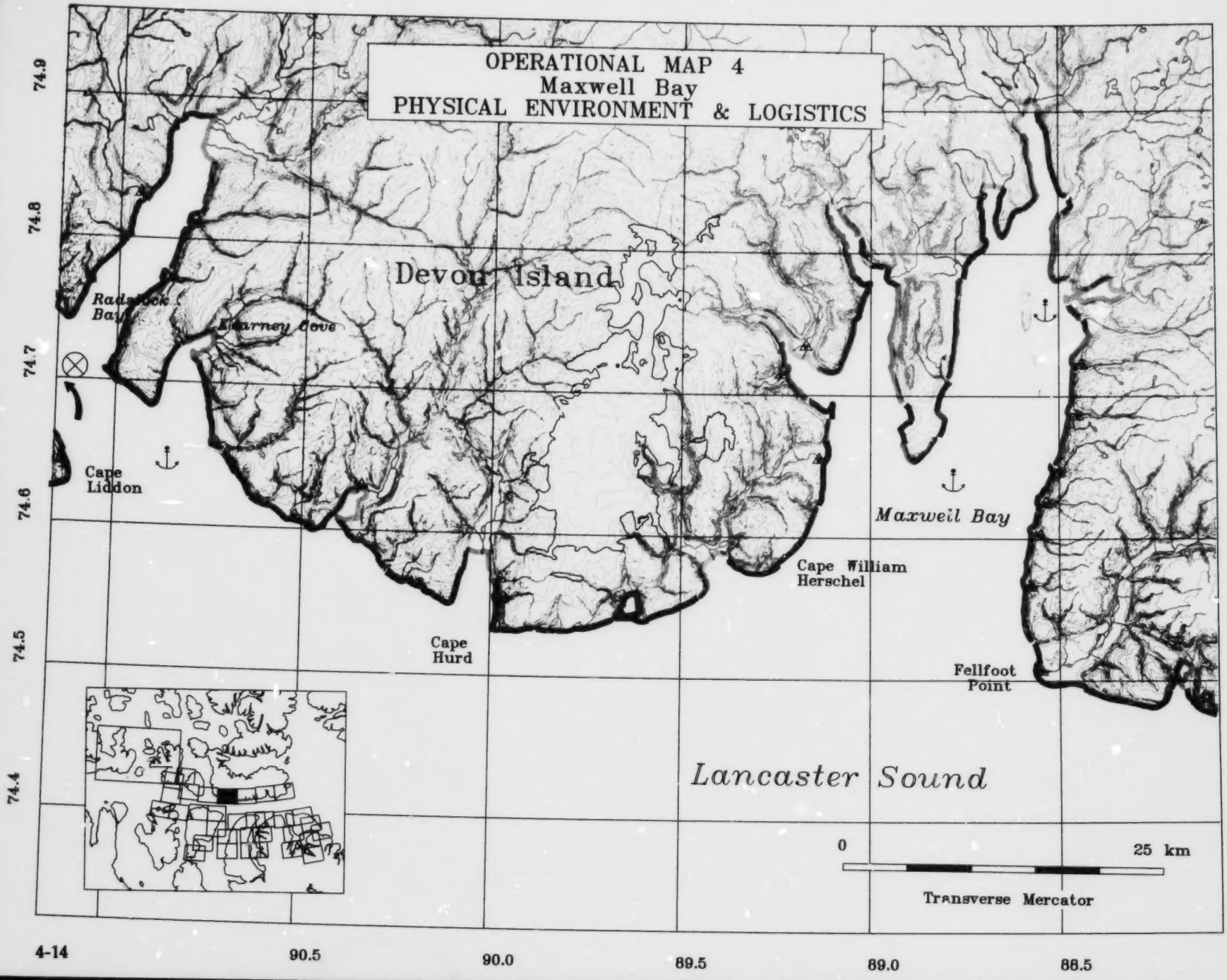
Gu 10 In late August 1976, 1000+ kittiwakes were seen along this section of coast (54).



Occurrence of Species and Resource Use

- Be 8-10
- PB 8, 9
- Fu 9
- Fu 10
- Gu 10


OPERATIONAL MAP 3
Powell Inlet
SHORELINE SENSITIVITY
74.9
74.8
74.7
74.6
74.5
74.4
AREA 11
AREA 10
AREA 9
AREA 8
Stratton Inlet
Burnett Inlet
Powell Inlet
Gu10
Hobhouse Inlet
Fu10
Fu9
PB9
Be9
PB8
Be8
Be10
0
25 km
Transverse Mercator
88.0
87.5
87.0
86.5
86.0
85.5


OPERATIONAL MAP 4
Maxwell Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Devon Island
Radstock Bay
Kearney Cove
Cape Liddon
Maxwell Bay
Cape William Herschel
Cape Hurd
Fellfoot Point
Lancaster Sound
0
25 km
Transverse Mercator
74.9
74.8
74.7
74.6
74.5
74.4
90.5
90.0
89.5
89.0
88.5

Operational Map 4 - *Maxwell Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 5
Topographic Map - 48F, 58E
Hydrographic Chart - 7503, 7527, 7568, 7569
Video Tapes (reference number) - 01

ACCESS

Shoal water exists along much of this coastline. Anchorage is available for large and small craft in Maxwell Bay; the tidal stream in the bay floods at 25 cm/s and ebbs at 10 cm/s. Landing with small craft may be possible at the western approach to the bay (Cape William Herschel), noting the shoal water hazard.

Radstock Bay offers excellent protection particularly in the upper reach; depths are generally greater than 50 m. Two landing beaches in Radstock Bay with space on shore for discharged cargo are suitable for beaching barges. Anchorage is available off either beach. The mean tidal variation in Radstock Bay is 1.9 m. Travel over ice should be possible from November to June.

COUNTERMEASURES

Every effort should be made to prevent oil from reaching the highly sensitive shore zones that predominate this area and particularly the noted areas in and around Maxwell and Radstock Bays.

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, offshore and nearshore, containment for recovery or burning is recommended. Dispersant application may be ecologically justified for spills offshore as well as those that approach important coastal areas. Dispersant use in nearshore waters will be subject to expert advice, at the time of the spill, regarding the location of the important beluga population.

The breadth of Maxwell Bay obviates the use of exclusion booming except for the several small inlets within the bay. Oil approaching Maxwell Bay may be diverted to less sensitive talus coasts near its entrance (note tidal current). A similar strategy of diverting incoming oil to less sensitive shorelines near its entrance is suggested for Radstock Bay.

Exposed shoreline in this area is predominantly cliff and talus, and may not require active cleaning if not heavily oiled.

Few opportunities exist in this area for beach access and shore-based operations. The landing beaches noted in Radstock Bay could be considered at sites for the temporary storage and incineration of oiled debris. However, the preponderance of archaeological sites in the area dictates that expert advice be sought if Radstock Bay is to be considered. The lowland area near Cape William Herschel could also be investigated for the possibility of shore operations.

SAFE HAVENS

The preferred option for a safe haven would be the several inlets noted in Map 3 (e.g., Blanley Bay, 35 km east of Maxwell Bay) which are specified as of lesser sensitivity than this area. Within this area, Kearny Cove (on the east side of Radstock Bay) may be suitable as a site for tanker lightering and/or stabilization operations. Its inlet width of 850 m should allow good oil containment; however, depths at its entrance indicate 10 to 14 m. The upper portion of Radstock Bay may also be suitable; however, the minimum inlet width is about 3500 m.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 4 - *Maxwell Bay*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
11	Fellfoot Point	80.60
12	Maxwell Bay	101.00
13	Cape Hurd	100.50
14	Radstock Bay	119.00
15	Cape Ricketts	103.50

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Important R
Fulmer Fu
Beluga Be
Gull Gu
Walrus Wa
Polar Bear PB
Walrus Haul-out Site Wa

Environmental Description

R 11-15 There are some 130 archaeological sites that have been identified along the coast between Areas 11 and 16. The south coast of Devon Island is noted for its archaeological significance, with substantial settlement dating back to the prehistoric period. There is also an historic site of interest to the Canadian Parks Service at Eden Point (8). The G.N.W.T. has identified the coastal and marine area of Maxwell Bay as an area of interest to the Department of Renewable Resources due to its large concentration of polar bears (44).

R 14 Sport and domestic sport hunting occurs primarily in the Radstock Bay area in March, April, and May. Hunting may occur in the offshore or shoreline areas (56).

Be 11 Estuarine concentrations of belugas occur occasionally at Fellfoot Point from mid-July to mid-August (33, 63).

Be 12-14 During September, thousands of belugas migrate along the Devon Island coast out of Barrow Strait (24, 41). Large feeding aggregations often occur in Maxwell and Radstock bays.

Wa 12, 14 During July and August, walruses occupy terrestrial haul-out sites in Maxwell Bay and Kearney Cove (10). Usually less than 100 walruses haul-out at each site, but larger numbers are often seen foraging in the vicinity.

PB 12-14 Polar bears concentrate at, and show high fidelity to, summer feeding areas in the bays of southwestern Devon Island (68, 69, 70).

Fu 12 On occasion, large concentrations of fulmars occur along the fast ice edge in Maxwell Bay (54).

Fu 13 In June, August, and September, the largest concentrations of fulmars in the Barrow Strait area are found along this stretch of coast near Cape Hurd (9, 36, 54).

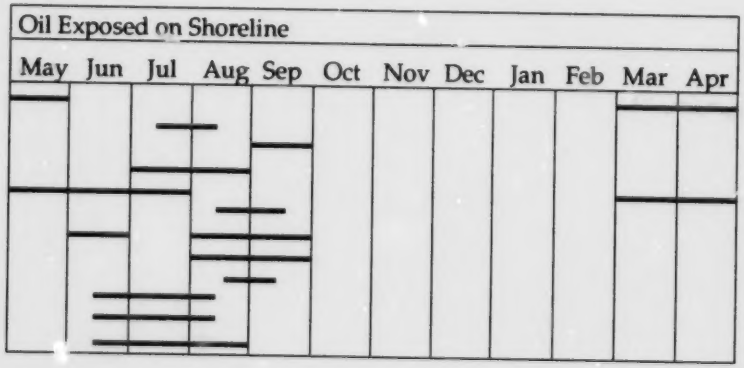
Fu 14 In August and September, thousands of fulmars are attracted to the Devon coast east of Radstock Bay (9, 36, 54).

Gu 11 In late August 1976, 1000+ kittiwakes were seen along this section of coast (54).

Gu 12 Over 100 pairs of glaucous gulls nest in four colonies on the east side of Maxwell Bay (53).

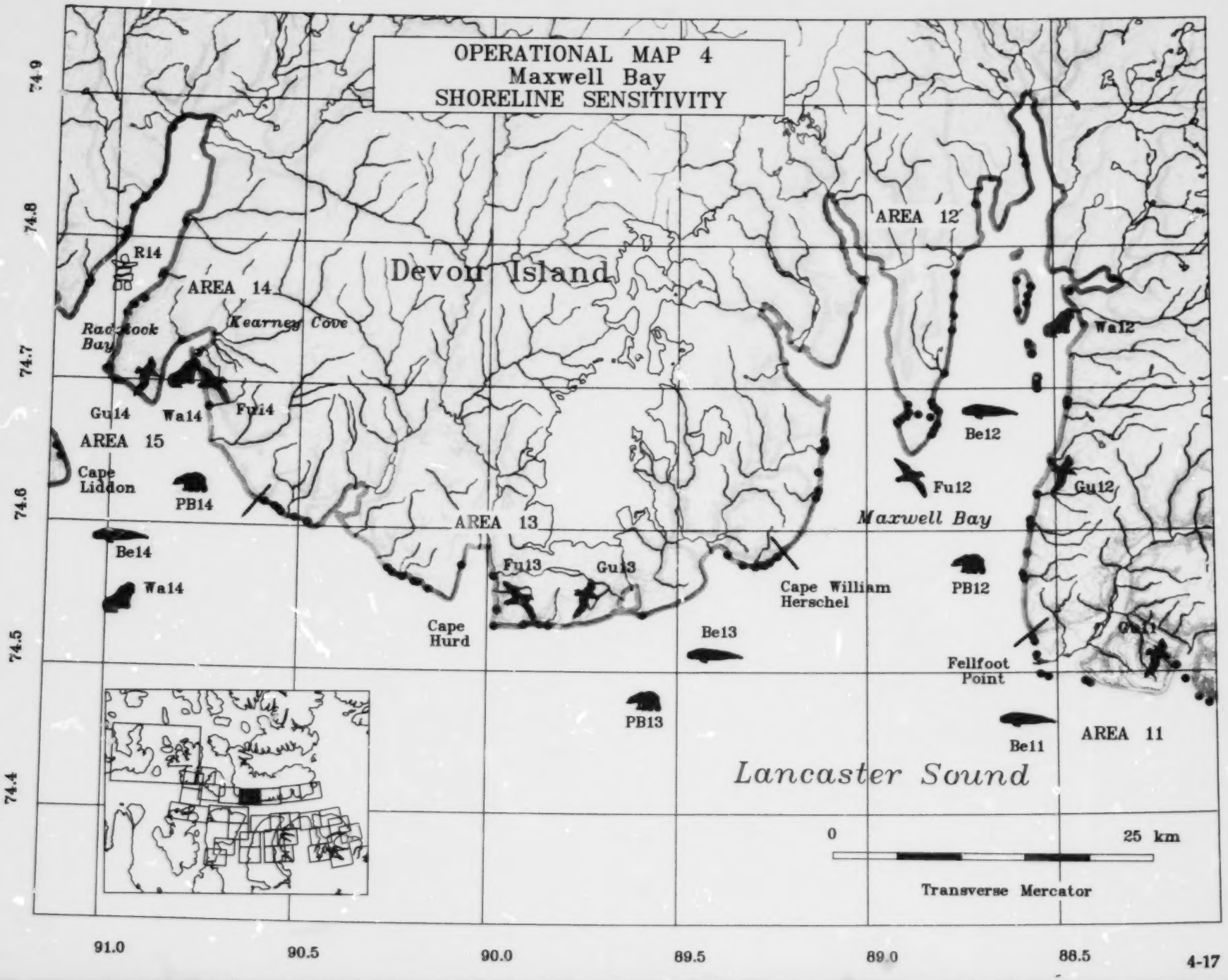
Gu 14 Over 60 pairs of glaucous gulls nest in two colonies in Radstock Bay (53).

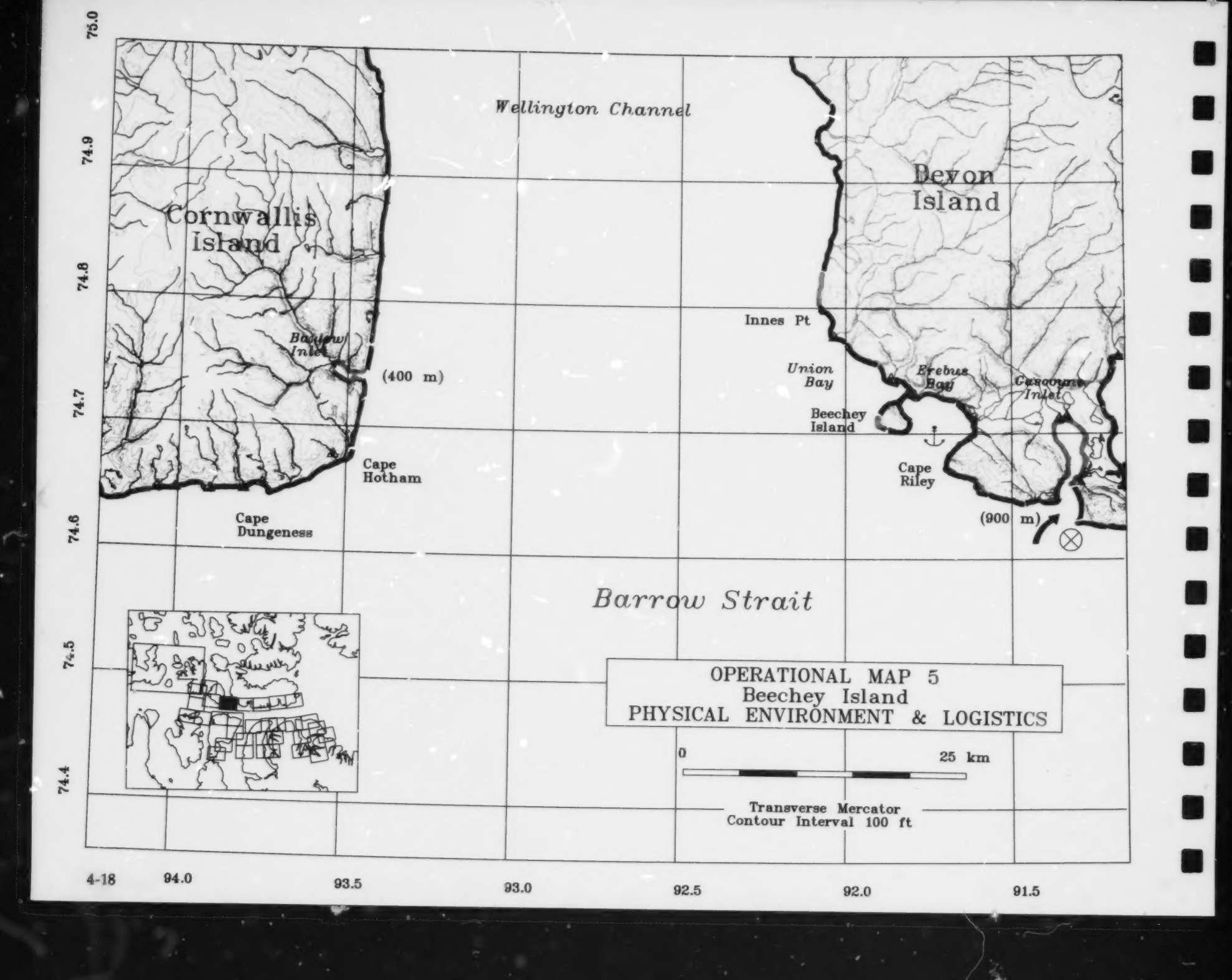
Gu 13, 14 In years in which the Barrow Strait pack ice breaks up early, thousands of kittiwakes occur along the fast ice across Maxwell Bay in mid- to late June (9). Smaller numbers use these coastal waters in July and August (1, 54).



Occurrence of Species and Resource Use

R 14
Be 11
Be 12-14
Wa 12, 14
PB 12-14
Fu 12
Fu 13
Fu 14
Gu 11
Gu 12
Gu 14
Gu 13, 14


OPERATIONAL MAP 4
Maxwell Bay
SHORELINE SENSITIVITY
Devon Island
AREA 12
AREA 14
AREA 15
AREA 13
AREA 11
R14
Kearney Cove
Gu14
Wa14
Fu14
Cape Liddon
PB14
Be14
Wa14
Cape Hurd
Fu13
Gu13
Maxwell Bay
Be12
Fu12
Wa12
Gu12
PB12
Cape William Herschel
Be13
PB13
Fellfoot Point
Be11
Lancaster Sound
0
25 km
Transverse Mercator
74.9
74.8
74.7
74.6
74.5
74.4
91.0
90.5
90.0
89.5
89.0
88.5


75.0
74.9
74.8
74.7
74.6
74.5
74.4
Wellington Channel
Cornwallis Island
Devon Island
Barrow Inlet
(400 m)
Innes Pt
Union Bay
Erebus Bay
Cascoyne Inlet
Beechey Island
Cape Riley
(900 m)
Cape Hotham
Cape Dungeness
Barrow Strait
OPERATIONAL MAP 5
Beechey Island
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Contour Interval 100 ft
4-18
94.0
93.5
93.0
92.5
92.0
91.5

Operational Map 5 - *Beechey Island*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 5
Topographic Map - 58E, 58F
Hydrographic Chart - 7503, 7527, 7569
Video Tapes (reference number) - 01

ACCESS

Deep water exists close to shore on the west side of Wellington Channel; there is shoaling along much of the east shore. Wellington Channel has a large tide range of 2.6 m in this area. The tidal stream is 75 cm/s on the flood and near zero on the ebb. During the open water season, multi-year ice floes may be encountered from the north. Currents are generally southward into Barrow Strait, although a band of northward flow is found near Devon Island.

Gascoyne Inlet has good landing beaches and should allow good access near its entrance; past the narrows, depths are generally under 10 m. Anchorage is available in Erebus Bay (20 m charted) although it is exposed to southerly weather. Beach access is possible but care should be taken not to disturb the several important archaeological sites.

On the west side of the channel, Barlow Inlet provides excellent shelter for small craft (4.6 m depth at entrance). Cape Hotham is reported to possibly have uncharted shoal submerged rocks.

Just north of the map area (approximately 40 km of map boundary) on the east side of Wellington Channel, Macormick Bay has 11 m depths and suitable landing beaches.

There is a 610 m x 18 m gravel runway near the west entrance to Radstock Bay.

Approximately 5 km north of the map boundary (Griffin Inlet), on the east side of Wellington Channel, there is a 1920 m x 60 m gravel runway of unknown status.

COUNTERMEASURES

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations down to 6 tenths. In open water conditions, containment for recovery or burning is recommended. Containment operations will have to contend with the varying tidal stream as well as occasional multi-year ice floes from the north. Dispersant application to protect waterfowl should be considered except in the several shallow bays.

Gascoyne Inlet (900 m) and Barlow Inlet (400 m) could be protected by exclusion booming. Other areas could be protected only by diversion booming, directing oil to less sensitive cliff and talus coasts.

The majority of coastline in this area is high-relief and highly exposed; if not heavily oiled, active cleaning efforts may not be required. Gascoyne Inlet offers good access and could be considered as a site for the temporary storage and incineration of oiled debris.

SAFE HAVENS

No appropriate safe havens were identified in this area. The closest good alternative is Intrepid Bay (Map 6) which is 100 km west of Cape Hotham.

Operational Map 5 - *Beechey Island*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
15	Cape Ricketts	103.50
16	Beechey Island	102.50
17	Wellington Channel	73.50
18	Cape Hotham	71.80
19	Cape Dungeness	116.30

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Walrus Wa
- Polar Bear PB
- Walrus Haul-out Site Wa
- Fulmer Fu
- Gull Gu
- Alcid Al
- Sea Duck SD
- Fulmer Colony Fu

Environmental Description

R 15-19 Several archaeological sites are located along this stretch of coastline. There is also an historic site of interest to Economic Development and Tourism, G.N.W.T., on Beechey Island (8).

R 19 A seasonal campsite located between Cape Dungeness and Cape Hotham is used by Resolute Bay hunters as a staging point for harvesting along the floe edge in Wellington Channel and Barrow Strait. Ringed and bearded seals are hunted along the coastal reaches in the tidal cracks and shore leads and at their breathing holes during the ice cover period. In the open water and early winter season, seal hunting is conducted in coastal bays from Assistance Bay to Allen Bay (22). Sea birds and eider ducks are hunted during the open water summer period between Cape Dungeness and Sheringham Point.

Wa 15, 16 During July and August, walruses forage along the coast and occupy terrestrial haul-out sites (usually < 100 animals) at Cape Ricketts and Union Bay (10, 23).

PB 15, 16 Polar bears concentrate at, and show a high fidelity to, specific summer feeding areas in the bays of southwestern Devon Island (68, 69, 70).

Fu 15 A large colony of 10,000 pairs of fulmars occupies about 3.5 km of cliff at Cape Liddon. The coastal areas around Cape Liddon support thousands of fulmars from early June to early August (7, 53).

Fu 17 From early August to early September 1976, hundreds of fulmars were found along the west coast of Devon Island north of Innes Point (54).

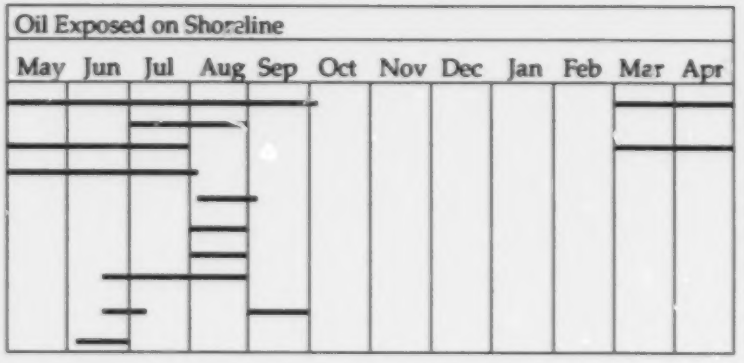
Fu 19 During August of some years, hundreds of fulmars occur along the south Cornwallis Island coast (36).

AlGu 16 Over 250 glaucous gulls and 400+ guillemots have been seen along the coast of Beechey Island in August. A colony of 20+ pairs of guillemots nests on Beechey Island (1).

Gu 15, 16 In years in which the Barrow Strait pack ice breaks up early, thousands of kittiwakes occur along the fast ice from Maxwell Bay to Cape Riley in mid- to late June (9). Smaller numbers use these coastal waters in July and August (1, 54).

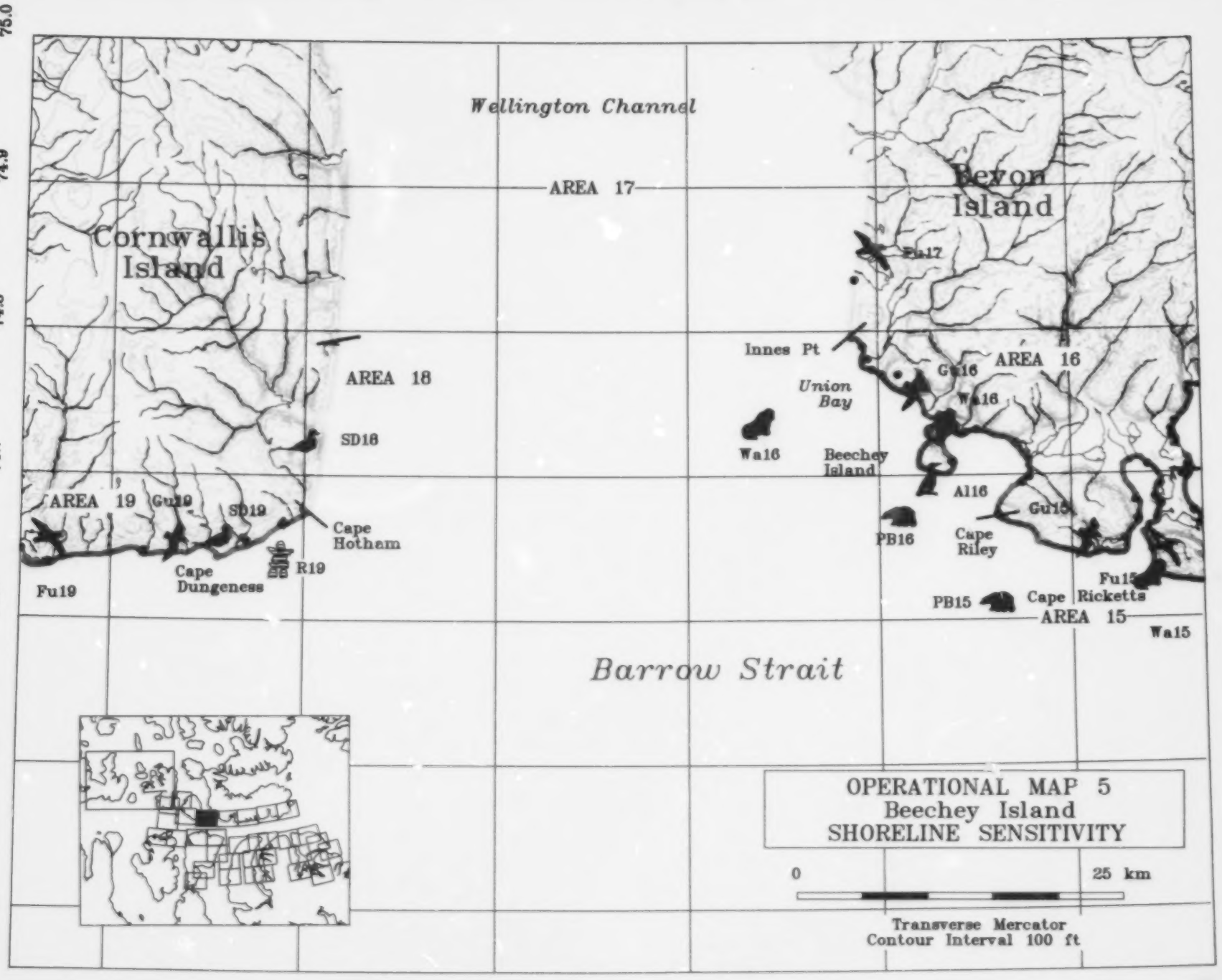
Gu 19 In years in which the Barrow Strait pack ice breaks up early, hundreds of kittiwakes and glaucous gulls occur along the fast ice edge from Cape Hotham to Resolute Bay from mid-June until early July (4, 9). A few hundred ivory gulls may frequent this coast in September (22).

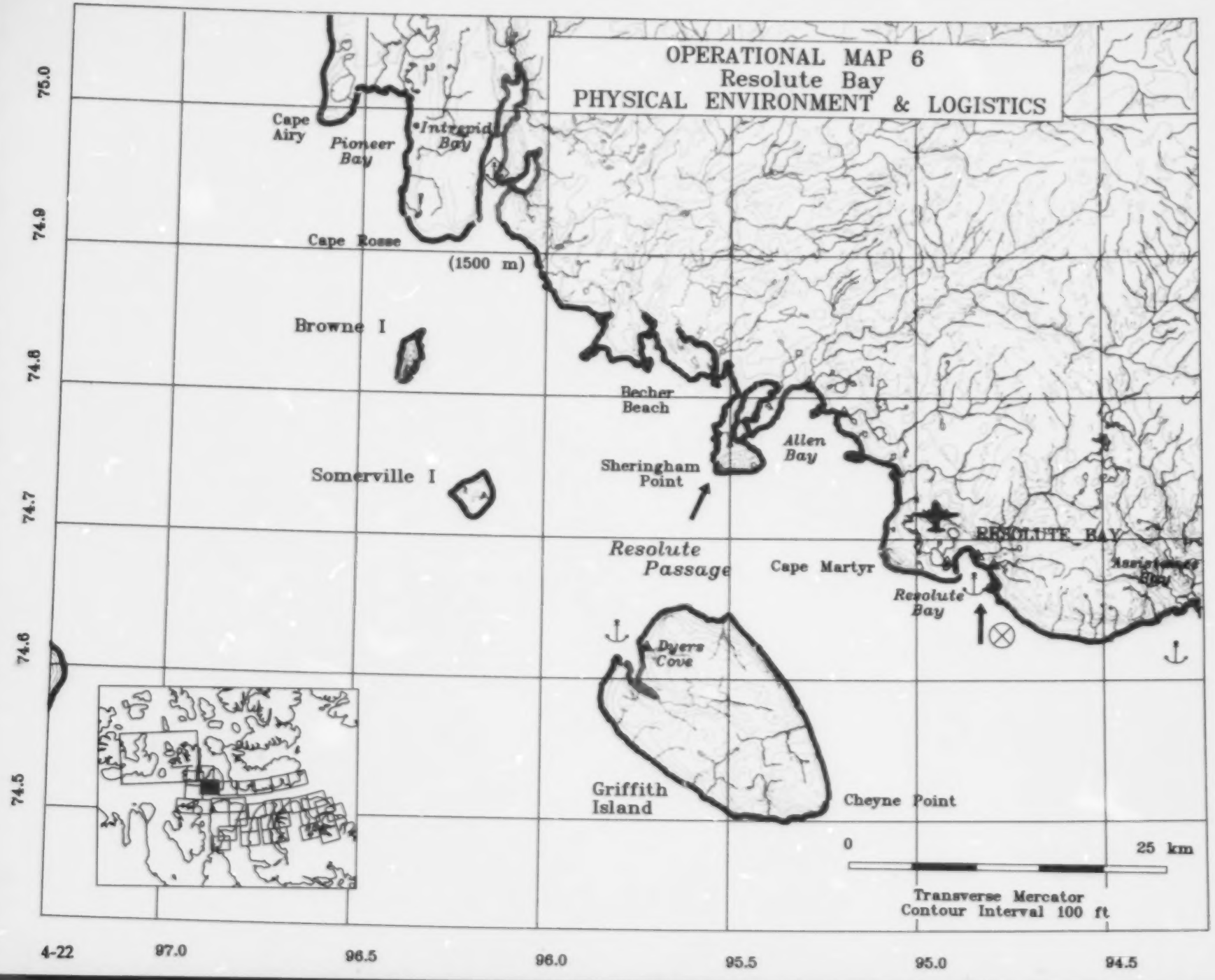
SD 18, 19 In years in which Barrow Strait breaks up by early June, the ice edge along the southeast coast of Cornwallis Island attracts thousands of eiders (9).



Occurrence of Species and Resource Use

- R 19
- Wa 15, 16
- PB 15, 16
- Fu 15
- Fu 17
- Fu 19
- AlGu 16
- Gu 15, 16
- Gu 19
- SD 18, 19


75.0
74.9
74.8
74.7
74.6
74.5
74.4
Wellington Channel
AREA 17
Cornwallis Island
Devon Island
Fu17
Innes Pt
AREA 16
Union Bay
Wa16
Beechey Island
AREA 18
SD18
AREA 19
Gu19
SD19
Cape Hotham
R19
Cape Dungeness
Fu19
A116
Gu15
PB16
Cape Riley
Fu15
Cape Ricketts
PB15
AREA 15
Wa15
Barrow Strait
OPERATIONAL MAP 5
Beechey Island
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 100 ft
94.0
93.5
93.0
92.5
92.0
91.5


OPERATIONAL MAP 6
Resolute Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Cape Airy
Pioneer Bay
Intrepid Bay
Cape Rosse
(1500 m)
Browne I
Somerville I
Becher Beach
Allen Bay
Sheringham Point
Resolute Passage
RESOLUTE BAY
Cape Martyr
Resolute Bay
Dyers Cove
Griffith Island
Cheyne Point
0
25 km
Transverse Mercator
Contour Interval 100 ft
75.0
74.9
74.8
74.7
74.6
74.5
97.0
96.5
96.0
95.5
95.0
94.5

Operational Map 6 - *Resolute Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 6
Topographic Map - 58F, 68E, 68H
Hydrographic Chart - 7503, 7511, 7569, 7829
Video Tapes (reference number) - 01

ACCESS

Access over ice to the entire area could be accomplished from November to June/July. The 50 m contour lies 5 to 8 km offshore from Cape Airy to Cape Martyr and less than 3 km offshore from Cape Martyr to Assistance Bay. Nearshore bathymetry is known only for Resolute Bay and the eastern portion of Allen Bay.

Anchorages are available in Assistance Bay (7.3 m - 14.6 m), Resolute Bay (8.5 m plus) and in Dyers Cove (3.7 m) on Griffith Island. Landing beaches are available at Sheringham Pt. and two in Resolute Bay which also has a pier for vessels drawing about 7.6 m or less.

Resolute Bay airfield has 1980 m and 1220 m gravel runways. The former is capable of handling Hercules aircraft.

COUNTERMEASURES

Offshore and nearshore, in ice concentrations down to 6 tenths, in-situ burning of oil is recommended in conjunction with tracking of oiled ice areas. In open water conditions (offshore and nearshore), containment for recovery or in-situ burning is recommended. A condition on burning in this area is that winds carry smoke away from the community of Resolute Bay. Tidal currents can range as high as 150 cm/s on the ebb; therefore, containment systems must be dynamic. Dispersant use is suggested as an alternative offshore to protect waterfowl concentrations and sensitive shorelines.

Resolute Bay should be protected from oiling using diversion booming to permit vessel access. Spills in Resolute Bay should be contained thereby sealing the entrance. The bay mouth is 3700 m wide and currents in the bay are generally low; under the influence of westerly winds, ice can choke the bay. Oil should also be diverted from Assistance Bay, Belcher Bay, and Pioneer Bay onto nearby raised beaches or hummocky shores for recovery. Cliff coasts, raised beaches, hummocky shores, talus coasts, and platform coasts that are not heavily oiled may not require active cleaning efforts. Resolute Bay could possibly be used as a temporary storage site for oiled material collected during cleanups. Stockpiled material could be incinerated on-site, or in Resolute Bay, or shipped south for disposal.

SAFE HAVENS

Intrepid Bay, though uncharted, appears to be a good candidate for a safe haven for vessel offloading and/or stabilization operations. The steep sides and narrow inlet (1500 m) would offer good protection from the elements and an excellent opportunity to contain the spread of any further oil release. If the bay is to be used, a depth survey should be undertaken.

Operational Map 6 - *Resolute Bay*

Environmental Description

R 19-26 There are a number of archaeological sites in these areas. A national historic site of interest to the Canadian Parks Service is located within Area 23 at Resolute Bay and Assistance Bay.

R 19 In the open water and early winter season, seal hunting is conducted in coastal bays from Assistance Bay to Allen Bay (22). Sea birds and eider ducks are hunted during the open water summer period between Cape Dungeness and Sheringham Point. Assistance Bay is a popular seal and duck hunting area for Resolute Bay residents during the summer open water season.

R 20 Resolute Bay is a staging point for tourism and transportation services, and domestic hunting. Sea birds are hunted in the open water season along the coast between Griffith and Cornwallis Islands. The area near Resolute Bay is used extensively for hunting between November and May as the ice consolidates. Although some trapping occurs in this area, it is conducted only between November and March. Arctic fox are trapped along the coastline of Cornwallis and Griffith Islands.

R 21 Waterfowl are hunted in the Cape Martyr to Sheringham Point area from spring to fall. Major domestic fishing sites for anadromous char are in the Allen Bay area (14), where fishing occurs from late spring to mid-summer. During the open water summer period, nets are set at river mouths and along shorelines, while in the fall fishing occurs through holes in the new ice (14, 34). Narwhal and belugas are hunted along the coastal area of Allen Bay during the open water season (22).

R 22 From spring through fall, waterfowl hunting occurs in the coastal areas of Griffith Island near critical nesting and feeding areas (34). Large numbers of polar bear kills have been reported in Resolute Passage and adjacent to the coastline of Griffith Island (70). Sport and domestic hunting occurs adjacent to floe edges from October 1 to May 31, but is most intense in April. A main travel route from Resolute Bay to Somerset Island for caribou and polar bear hunting and for access to the Creswell Bay (Kuganayuk) outpost camp is along the south coastal region of Griffith Island. Travel occurs by snowmobile from November to June and July (73).

R 24, 25 Somerville and Browne Island are popular camping and egg collecting sites for Resolute Bay residents in May, June, and July (56).

Be 20, 21 During late August and early September in some years, large aggregations of belugas occur in Allen and Resolute Bays to feed on Arctic cod (5).

RS 23 From June to mid-July, large numbers of ringed seals haul-out to moult on the coastal fast ice (18, 23).

Co 19-21 Arctic cod occur sporadically in Assistance Bay, Allen Bay, and Resolute Bay from July through to freeze-up each year (2, 6).

Fu 20 During August of some years, hundreds of fulmars occur along the south Cornwallis Island coast (1).

Fu 22 In early August 1974, a concentration of 1000+ fulmars was found off the northeast coast of Griffith Island (9).

Gu 20 In years in which the Barrow Strait pack ice breaks up early, hundreds of kittiwakes and glaucous gulls occur along the fast ice edge from Cape Hotham to Resolute Bay from mid-June until early July (4, 9). A few hundred ivory gulls may frequent this coast in September (22).

Gu 25 A colony of 500 to 2000 pairs of kittiwakes is located on the south facing cliffs of Browne Island (1, 7). A colony of up to 100 pairs of glaucous gulls is located at the north end of the island (1, 9).

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

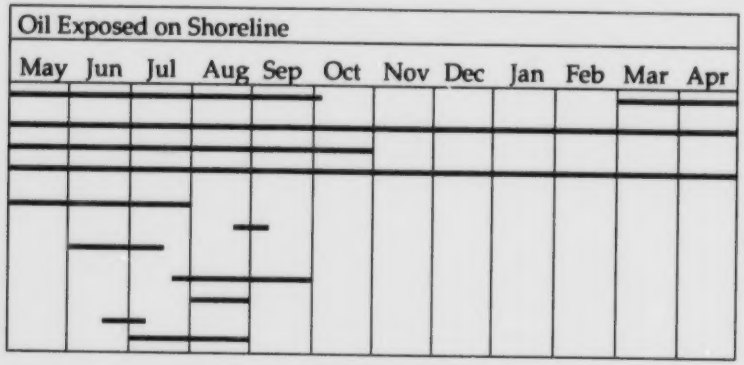
* See Appendix A
See Regional Maps for Offshore Sensitivity

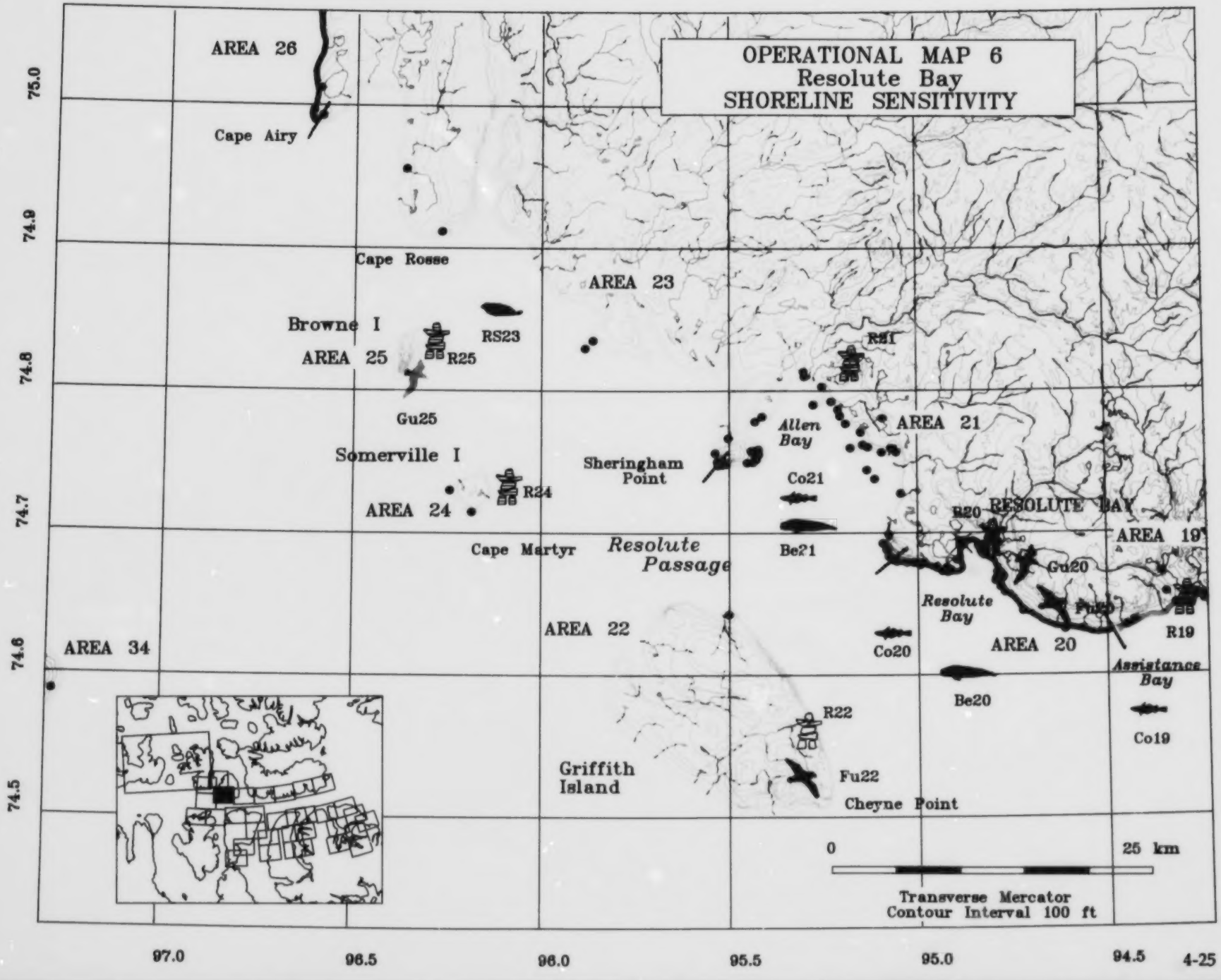
Area

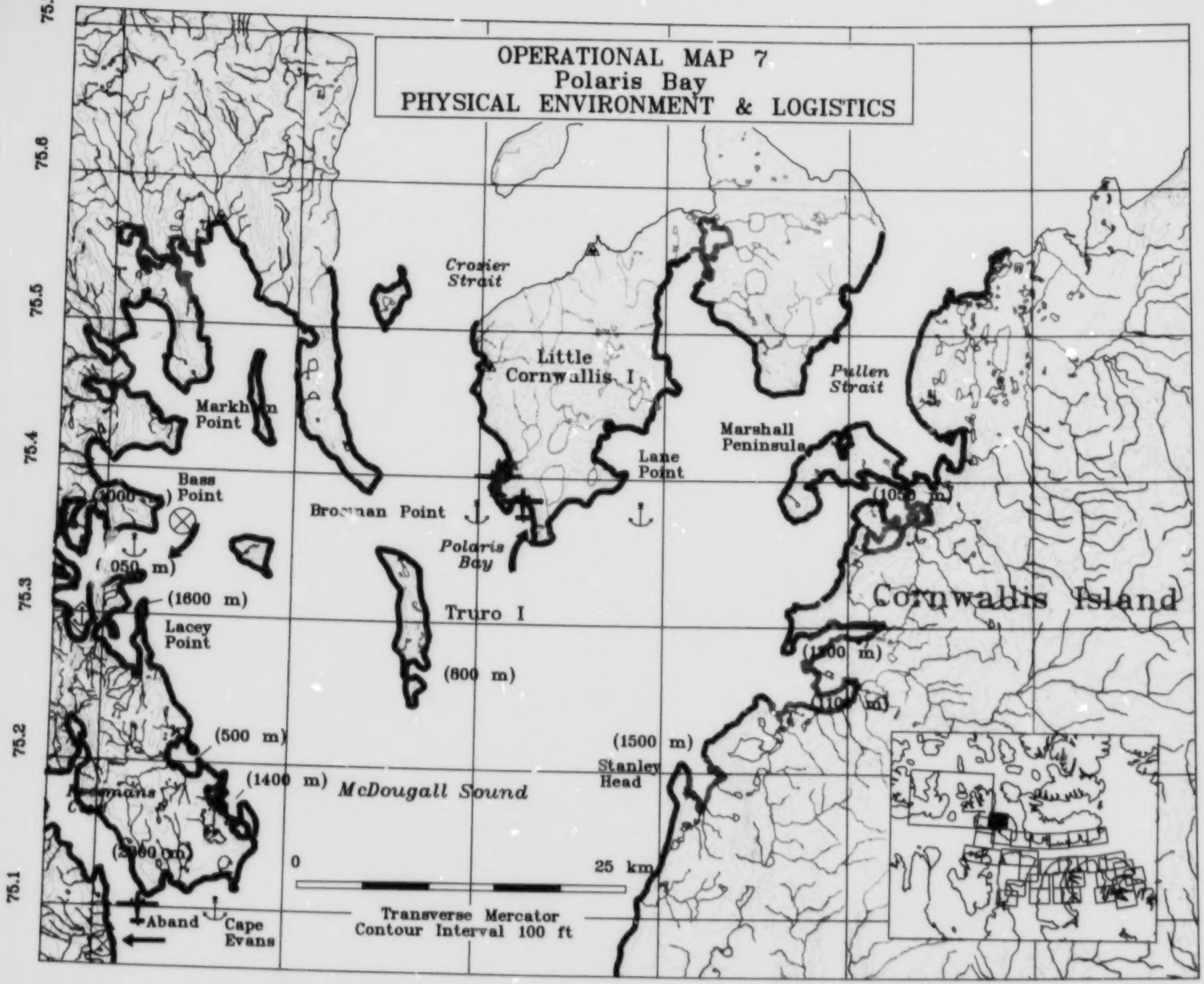
No.	Name	Sensitivity Ranking
19	Cape Dungeness	116.30
20	Resolute Bay	131.30
21	Allen Bay	84.00
22	Griffith Island	92.10
23	Cape Rosse	78.20
24	Somerville Island	79.30
25	Browne Island	77.80
26	Cape Airy	64.50

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Highly Important R
- Important R
- Beluga Be
- Ringed Seal RS
- Cod Co
- Fulmer Fu
- Gull Gu
- Sea Duck SD
- Gull Colony Gu




OPERATIONAL MAP 6
Resolute Bay
SHORELINE SENSITIVITY
AREA 26
Cape Airy
Cape Rosse
AREA 23
Browne I
RS23
AREA 25
R25
Gu25
Somerville I
R24
AREA 24
Cape Martyr
Resolute Passage
AREA 22
AREA 34
Griffith Island
R22
Fu22
Cheyne Point
Sheringham Point
Allen Bay
AREA 21
R21
Co21
Be21
R20
RESOLUTE BAY
AREA 19
Gu20
Resolute Bay
AREA 20
R19
Assistance Bay
Co20
Be20
Co19
0
25 km
Transverse Mercator
Contour Interval 100 ft
75.0
74.9
74.8
74.7
74.6
74.5
97.0
96.5
96.0
95.5
95.0
94.5
4-25


OPERATIONAL MAP 7
Polaris Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Crozier Strait
Little Cornwallis I
Pullen Strait
Marshall Peninsula
Lane Point
Bass Point
Brosnan Point
Polaris Bay
Truro I
Cornwallis Island
Lacey Point
(800 m)
(500 m)
(1400 m)
McDougall Sound
(1500 m)
Stanley Head
0
25 km
Transverse Mercator
Contour Interval 100 ft
Aband
Cape Evans
75.7
75.6
75.5
75.4
75.3
75.2
75.1
97.5
97.0
96.5
96.0
95.5

Operational Map 7 - *Polaris Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 7
Topographic Map - 58G, 68H
Hydrographic Chart - 7830, 7935, 7950
Video Tapes (reference number) - 01

ACCESS

In McDougall Sound the median open water season is three-to-four weeks. Little multi-year ice enters from the north due to restricted passage through Crozier and Pullen Straits. The tidal range is 1 m mean and 1.6 m large. A current through Crozier Strait sets southward at about 30 cm/s. The current along the east side of McDougall Sound sets continually to the northward, slack at low water and flooding at up to 100 cm/s. It should be noted that the depth surveys in McDougall Sound are incomplete, and caution is advised particularly in nearshore waters.

Anchorages are reported off Lane Point in about 85 m (mud), near Cape Evans in 27 m, and in the large bay between Lacey Point and Bass Point in 47 m (clay). This bay also contains several good beaches suitable for dry-ramp landing, as does the shingle beach noted 6.5 km north of Cape Capel. Care should be taken not to disturb the many archaeological sites in the area during any nearshore or shoreline operations.

The Cominco Polaris mine site on Little Cornwallis Island has a 1220 x 30 m year-round gravel airstrip and a 113 m long wharf with a least depth of 12.8 m.

COUNTERMEASURES

In ice concentrations of 6 tenths or greater in offshore and nearshore waters, in-situ burning of oil in conjunction with tracking oiled ice is recommended. The short open water season and incursion of ice floes during that time will severely limit the use of conventional containment and recovery techniques; rather, in-situ burning should be considered for oil amongst or wind-herded against close pack ice. Dispersant application may be justified to reduce impacts on surface resources where conditions allow their effective use.

Shoreline protection techniques have limited applicability due to the likely presence of ice. When conditions allow, a number of inlets are identified for protection by exclusion booming in order to limit the extent and persistence of shoreline contamination.

The identified landing beach locations, from which to base shoreline cleanup operations, are potential sites offering good marine access and space for the temporary storage and/or incineration of collected oil/material. Other sites may be possible in this area, particularly within Freemans Cove and along the low beaches south of Lacey Point. Incomplete charting does not allow the identification of sites on the east side of McDougall Sound although the low beaches south of Stanley Head may offer such opportunities. Consultation with archaeological experts should precede any shoreline activity due to the very high number of archaeological sites in this area.

SAFE HAVENS

Within the large bay between Lacey Point and Bass Point, the most southerly of the inlets appears to be a good candidate for a safe haven for vessel lightering and/or stabilization operations. Charted depths are 20 m through its entrance, and the inlet width of 1050 m offers an excellent opportunity to contain escaping oil.

Operational Map 7 - *Polaris Bay*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

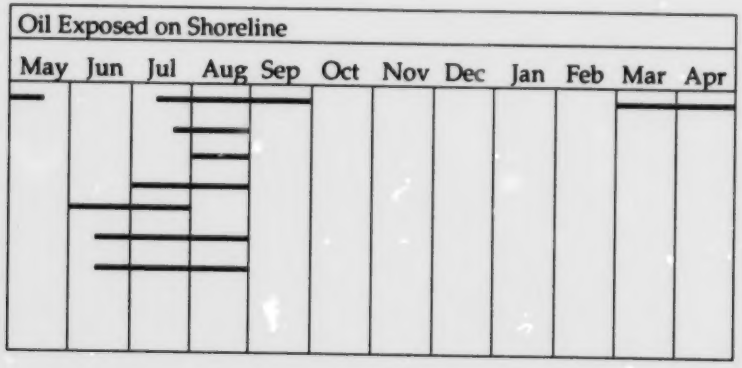
No.	Name	Sensitivity Ranking
26	Cape Airy	64.50
27	Midshipman Bay	70.90
28	Pullen Strait	66.10
29	Polaris Bay	68.80
30	Truro Island	59.20
31	Markham Point	66.20
32	Freemans Cove	70.90

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Gull Gu
- Walrus Wa
- Bearded Seal BS
- Ringed Seal RS
- Walrus Haul-out Site Wa

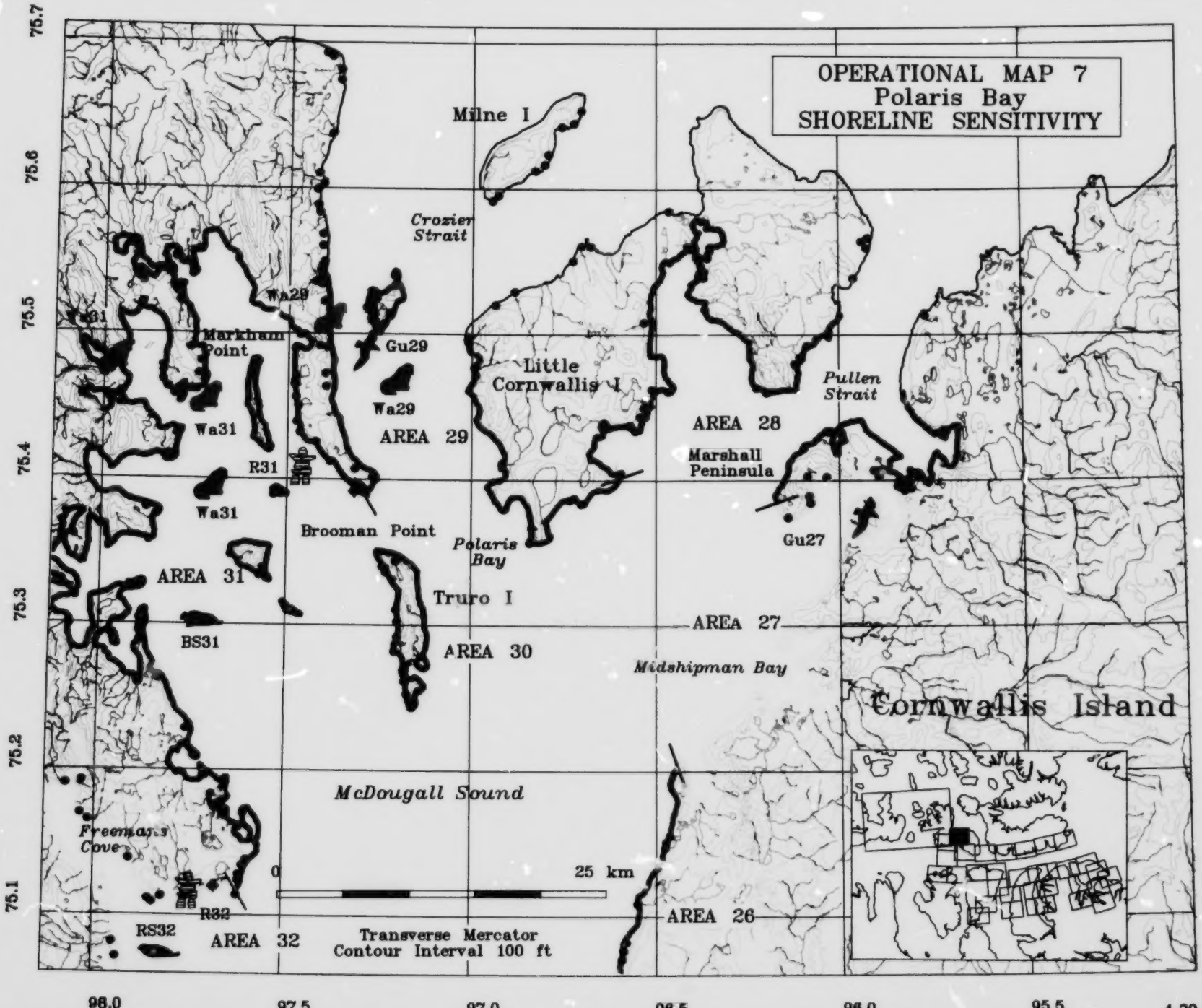
Environmental Description

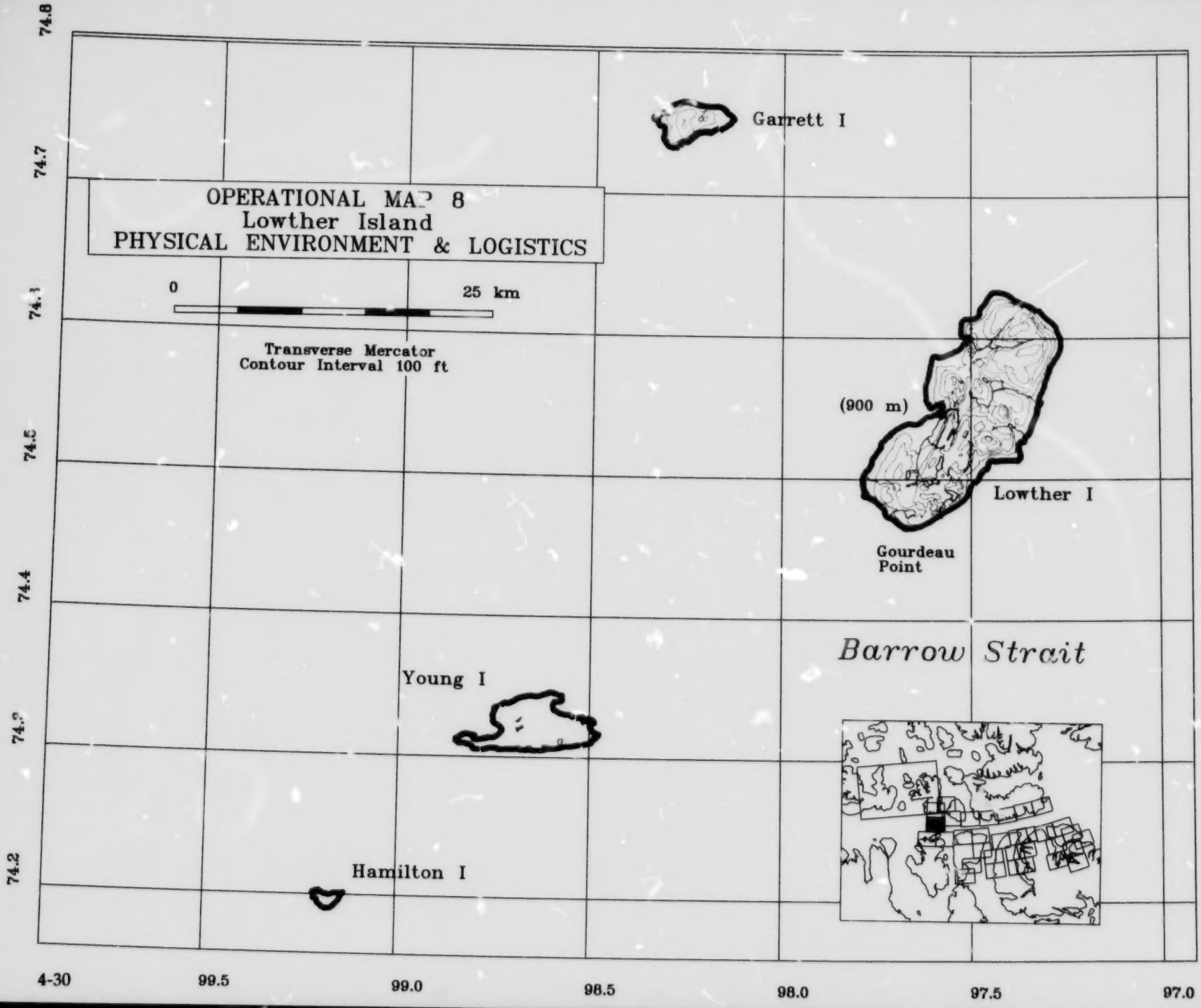
R 26-32 This stretch of coastline is historically significant, with 196 archaeological sites identified in the area to date.
R 31, 32 There is some seal hunting in the open water and polar bear hunting in Crozier Strait. Seasonal camps are located at Brooman Point, Cape Evans, and Bedford Bay (14).
Wa 29 During late July through August, as many as 200 walruses occupy a terrestrial haul-out site on the Brooman Peninsula, Bathurst Island (18, 61).
Wa 31 During August, walruses occupy terrestrial haul-out sites on Markham Point and forage in the general area (10).
BS 31 During July and August, relatively high densities of bearded seals occur in this complex coastal area (18, 23).
RS 32 High densities of ringed seals occur on the fast ice of Freemans Cove during June and July (18, 19).
Gu 27 The bay bounded by the Marshall Peninsula contained 200+ Arctic terns when surveyed in late June (1), and is likely the site of a large colony.
Gu 29 A colony of Arctic terns nests on the island in Crozier Strait. Over 250+ terns were counted there on each of two surveys in early to mid-August (1).



Occurrence of Species and Resource Use

R 31, 32
Wa 29
Wa 31
BS 31
RS 32
Gu 27
Gu 29


OPERATIONAL MAP 7
Polaris Bay
SHORELINE SENSITIVITY
Milne I
Crozier Strait
Markham Point
Wa29
Gu29
Wa31
Little Cornwallis I
Pullen Strait
AREA 29
AREA 28
Marshall Peninsula
R31
Wa31
Brooman Point
Polaris Bay
Gu27
AREA 31
Truro I
AREA 27
BS31
AREA 30
Midshipman Bay
Cornwallis Island
McDougall Sound
Freeman's Cove
0
25 km
R32
RS32
AREA 32
Transverse Mercator
Contour Interval 100 ft
AREA 26
75.7
75.6
75.5
75.4
75.3
75.2
75.1
98.0
97.5
97.0
96.5
96.0
95.5
4-29


OPERATIONAL MAP 8
Lowther Island
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Contour Interval 100 ft
Garrett I
(900 m)
Lowther I
Gourdeau
Point
Barrow Strait
Young I
Hamilton I
74.8
74.7
74.6
74.5
74.4
74.3
74.2
4-30
99.5
99.0
98.5
98.0
97.5
97.0

Operational Map 8 - *Lowther Island*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 6, Map 7
Topographic Map - 68E
Hydrographic Chart - 7829, 7830
Video Tapes (reference number) - 01

ACCESS

This area is typified by a short open water season, with ice clearing in mid- to late August and one-to-three weeks of less than 4 tenths ice coverage. Residual water currents are generally weak and set to eastward.

Nearshore waters near Garret Island are not sounded, but 20 m depths are charted about 2 km north of the island and very close to shore on the south. Lowther Island has raised beaches and hummocky shores that may allow shore access at several locations. Lowther Shoal, with 1.5 m over it, lies 16.5 km east northeast of the southern extremity of the island. Shoalwater surrounds Young Island and Hamilton Island. The large tide range is 1.5 m in this area.

Over ice access to this area from Resolute (90 km eastward) is reported for the months February to May.

COUNTERMEASURES

Considerable local knowledge exists about the islands in this area and should be accessed when planning countermeasures.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. The short open water season and incursion of ice floes during that time will severely limit the use of conventional containment and recovery techniques; rather, in-situ burning should be considered for oil amongst or wind-herded against close pack ice. Dispersant application may be justified to reduce impact on surface resources when conditions allow their effective use.

Shoreline protection techniques have limited applicability in this area due to the nature of the shorelines and the likely presence of ice. When conditions allow, the estuary on the west shore of Lowther Island (900 m width) could be protected by exclusion or diversion booming techniques.

The predominantly hummocky shores appear to offer reasonable shoreline access if required for shoreline cleanup operations. Local knowledge will aid in determining access points.

SAFE HAVENS

No potential safe havens for vessel lightering and/or stabilization operations were identified in this map area. The closest candidate site is Intrepid Bay (Map 6), entered 45 km northeast of Lowther Island.

Operational Map 8 - *Lowther Island*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
34	Lowther Island	75.80
35	Garrett Island	67.50
36	Young Island	67.40

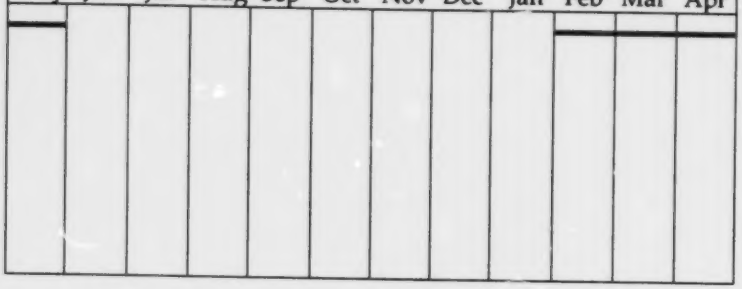
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Highly Important R

Environmental Description

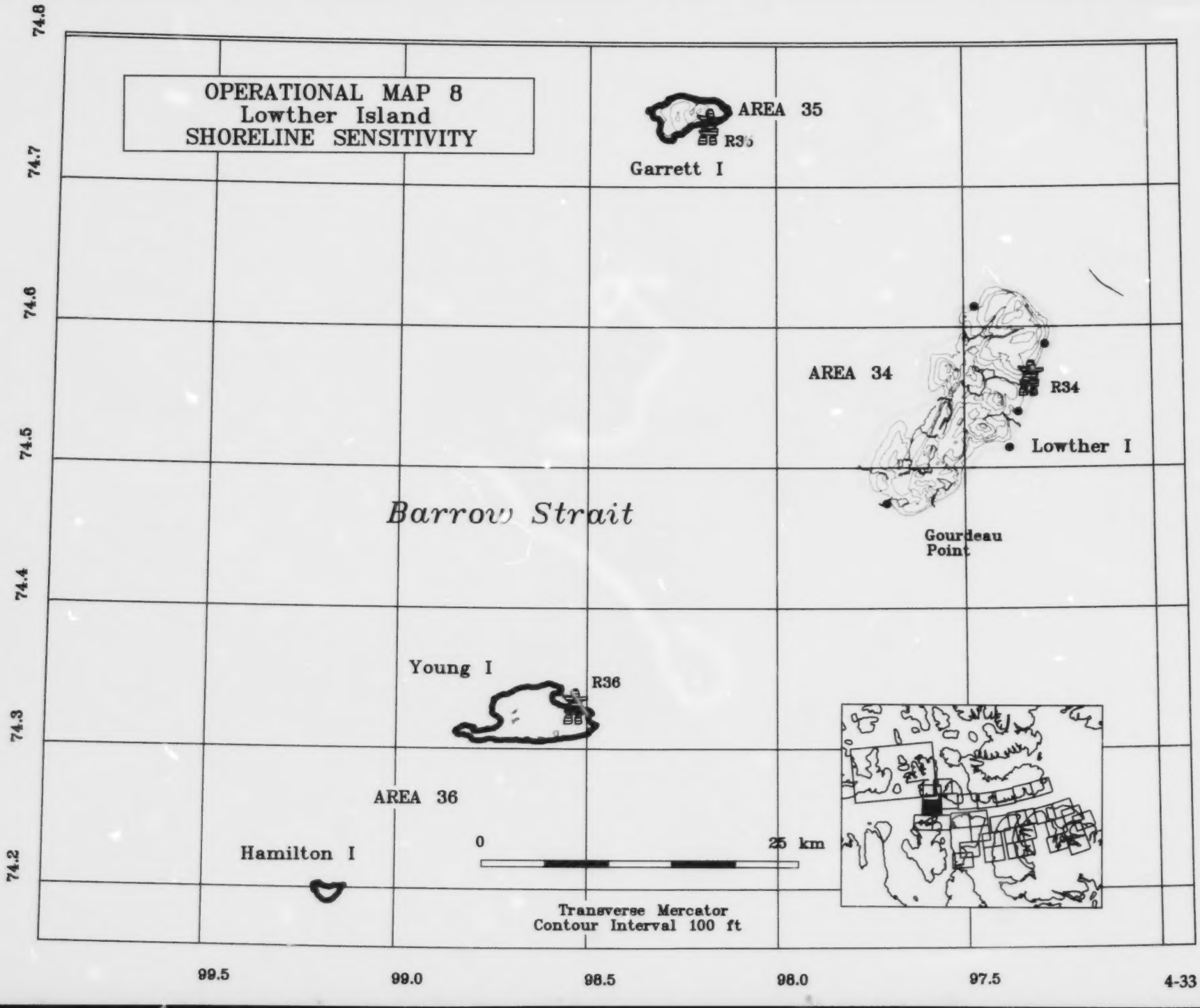
R 34-36 A number of archaeological sites are found in this area. Sport and domestic hunting for polar bear occurs from February to May on Lowther, Young, Hamilton, and Garrett Islands by Resolute Bay hunters and guides.

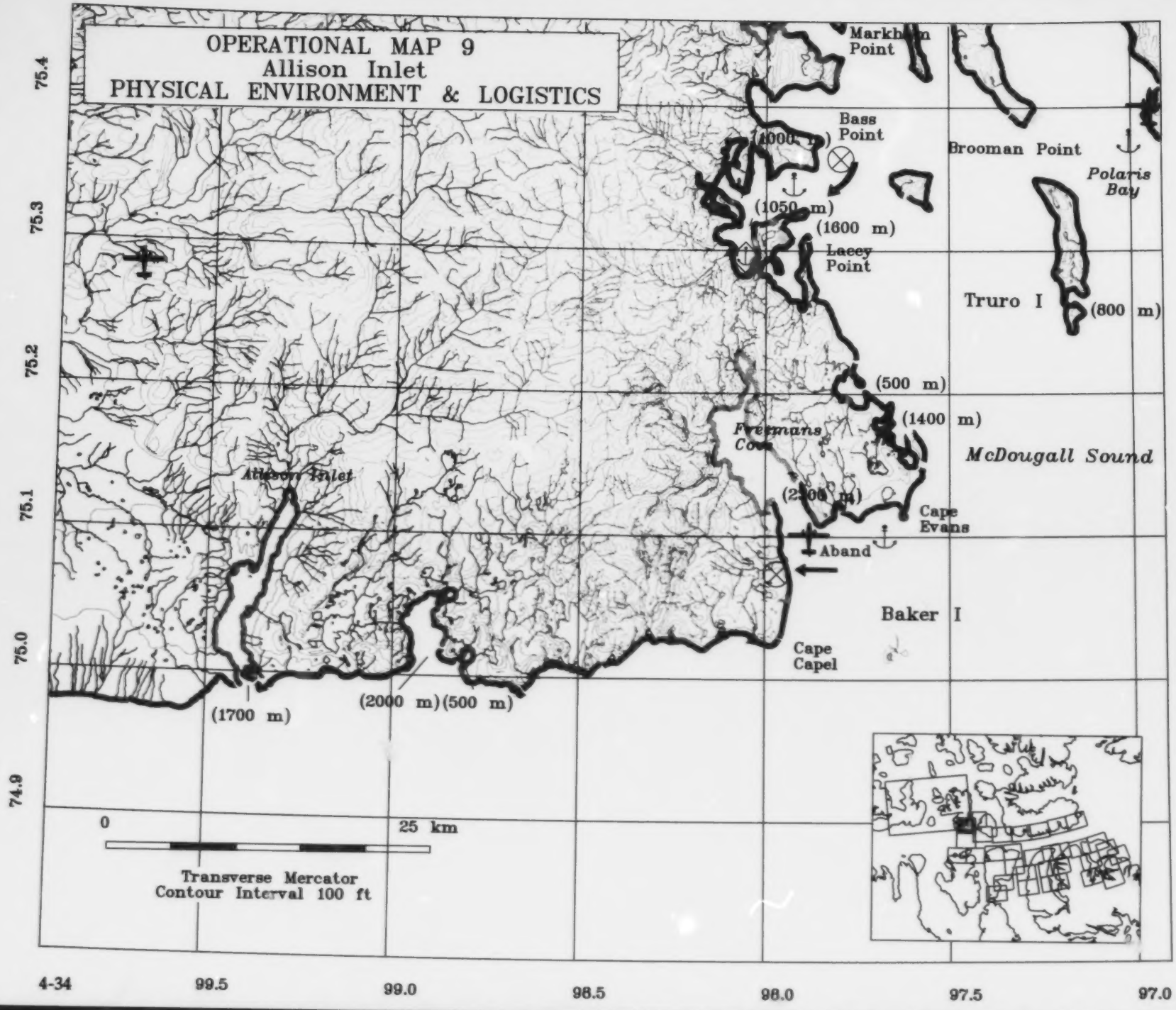
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

R 34-36


OPERATIONAL MAP 8
Lowther Island
SHORELINE SENSITIVITY
AREA 35
R35
Garrett I
AREA 34
R34
Lowther I
Gourdeau
Point
Barrow Strait
Young I
R36
AREA 36
Hamilton I
0
25 km
Transverse Mercator
Contour Interval 100 ft
74.8
74.7
74.6
74.5
74.4
74.3
74.2
99.5
99.0
98.5
98.0
97.5


OPERATIONAL MAP 9
Allison Inlet
PHYSICAL ENVIRONMENT & LOGISTICS
Markham Point
Bass Point
(1000 m)
(1050 m)
(1600 m)
Lacey Point
Brooman Point
Polaris Bay
Truro I
(800 m)
(500 m)
(1400 m)
Freemans Cove
McDougall Sound
(2300 m)
Cape Evans
Aband
Baker I
Cape Capel
Allison Inlet
(1700 m)
(2000 m)(500 m)
0
25 km
Transverse Mercator
Contour Interval 100 ft
75.4
75.3
75.2
75.1
75.0
74.9
4-34
99.5
99.0
98.5
98.0
97.5
97.0

Operational Map 9 - *Allison Inlet*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 9
Topographic Map - 68E, 68G, 68H
Hydrographic Chart - 7830, 7935
Video Tapes (reference number) - 01

ACCESS

In McDougall Sound the median open water season is three-to-four weeks. Little multi-year ice enters the sound from the north due to restricted passage through Crozier Strait. The tidal range is 1 m (mean) and 1.6 m (large). A current through Crozier Strait sets southward at about 30 cm/s. The current along the east side of the sound sets continually to the northward, slack at low water and flooding at up to 100 cm/s.

Anchorages are reported near Cape Evans in 27 m and in the large bay between Lacey Point and Bass Point in 47 m (clay). This bay also contains several good beaches suitable for dry-ramp landing, as does the shingle beach noted 6.5 km north of Cape Capel. Care should be taken not to disturb the many archaeological sites in the area during any nearshore and shoreline operations.

The south coast of Bathurst Island is fringed by shoal water that extends up to 5 km from shore, with depths less than 2 m up to 2 km from shore in places, making shore access extremely difficult. A 1620 m x 30 m abandoned gravel airstrip exists at Freemans Cove.

The Cominco Polaris mine site on Little Cornwallis Island (Map 7) is just off the northeast corner of this map area. It has a 1220 m x 30 m year-round gravel airstrip and a 113 m long wharf with a least depth of 12.8 m.

COUNTERMEASURES

In ice concentrations of 6 tenths or greater in offshore and nearshore waters, in-situ burning of oil in conjunction with tracking of oiled ice is recommended. The short open water season and incursion of ice floes during that time will severely limit the use of conventional containment and recovery techniques; rather, in-situ burning should be considered for oil amongst or wind-herded against close pack ice. Dispersant application may be justified to reduce impacts on surface resources where conditions allow their effective use.

Shoreline protection techniques have limited applicability due to the likely presence of ice. When conditions allow, a number of inlets are identified for protection by exclusion booming in order to limit the extent and persistence of shoreline contamination.

The identified landing beach locations are potential sites from which to base shoreline cleanup operations, offering good marine access and space for the temporary storage and/or incineration of collected oily material. Other sites may be possible in this area, particularly within Freemans Cove and along the low beaches south of Lacey Point. Consultation with archaeological experts should precede any shoreline activity due to the very high number of archaeological sites in this area.

SAFE HAVENS

Within the large bay between Lacey Point and Bass Point, the most southerly of the inlets appears to be a good candidate for a safe haven for vessel lightering and/or stability operations. Charted depths are 20 m through its entrance, and the inlet width of 1050 m offers an excellent opportunity to contain escaping oil.

Operational Map 9 - *Allison Inlet*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
29	Polaris Bay	68.80
31	Markham Point	59.20
32	Freemans Cove	66.20
33	Allison Inlet	65.70

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Sea Duck SD
- Walrus Wa
- Bearded Seal BS
- Ringed Seal RS

Environmental Description

R 29, 31, 32 A total of 130 archaeological sites have been identified within these areas.

R 31, 32 There is some seal hunting in the open water and polar bear hunting in Crozier Strait. Seasonal camps are located at Brooman Point, Cape Evans, and Bedford Bay (14).

Wa 31 During August, walruses occupy terrestrial haul-out sites on Markham Point (see Map 7) and forage in the general area (10).

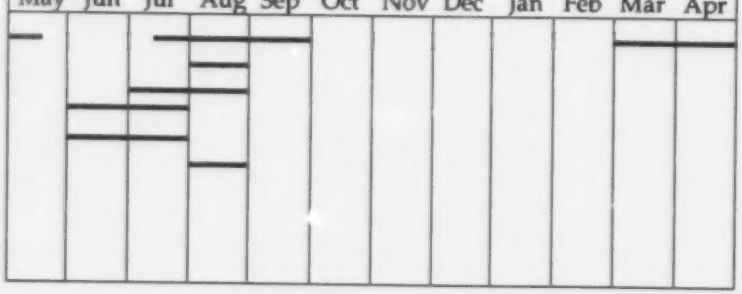
BS 31 During July and August, relatively high densities of bearded seals occur in this complex coastal area (18, 23).

RS 32 High densities of ringed seals occur on the fast ice of Freemans Cove during June and July (18, 19).

RS 33 High densities of ringed seals occur on coastal fast ice during June and July (18).

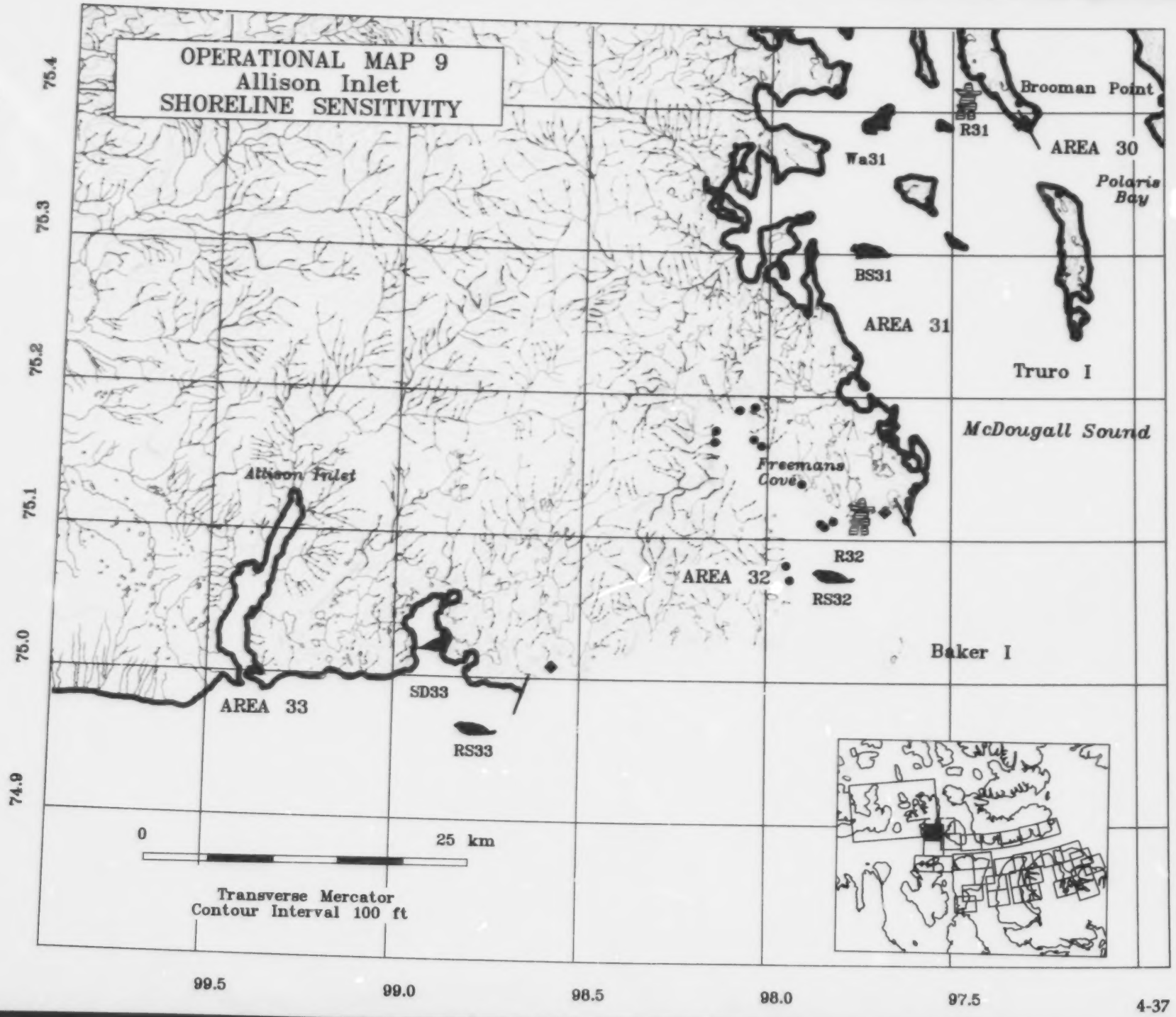
SD 33 Allison Inlet contained 800+ moulting oldsquaws when surveyed in August 1975 (1).

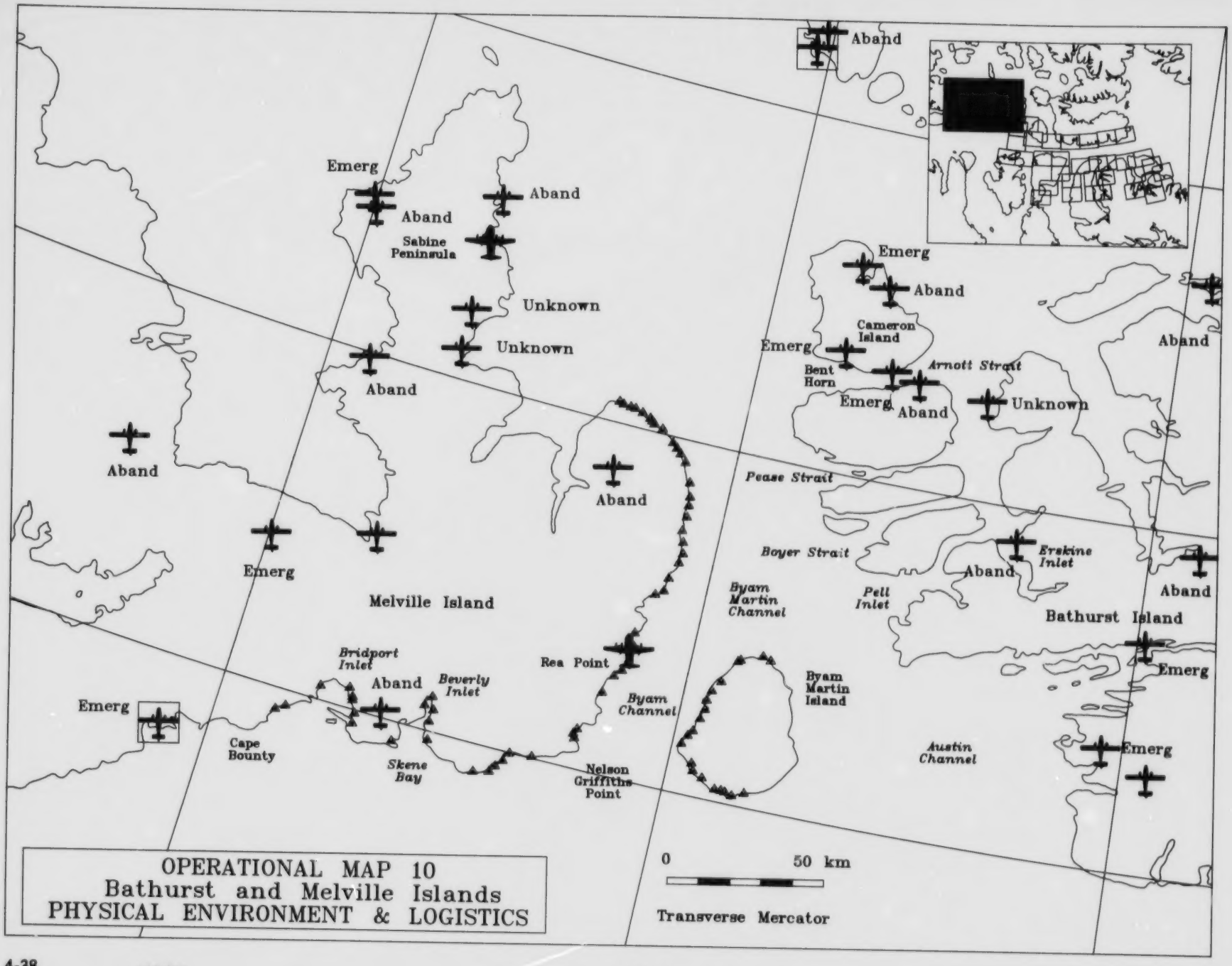
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

R 31, 32
Wa 31
BS 31
RS 32
RS 33
SD 33


OPERATIONAL MAP 9
Allison Inlet
SHORELINE SENSITIVITY
75.4
75.3
75.2
75.1
75.0
74.9
Brooman Point
R31
AREA 30
Wa31
Polaris Bay
BS31
AREA 31
Truro I
McDougall Sound
Freemans Cove
Allison Inlet
R32
AREA 32
RS32
Baker I
AREA 33
SD33
RS33
0
25 km
Transverse Mercator
Contour Interval 100 ft
99.5
99.0
98.5
98.0
97.5


Aband
Emerg
Aband
Sabine Peninsula
Aband
Unknown
Unknown
Aband
Aband
Emerg
Aband
Melville Island
Bridport Inlet
Aband
Beverly Inlet
Rea Point
Byam Channel
Emerg
Cape Bounty
Skene Bay
Nelson Griffiths Point
Byam Martin Island
Aband
Emerg
Cameron Island
Emerg
Bent Horn
Arnott Strait
Emerg
Aband
Unknown
Aband
Pease Strait
Boyer Strait
Erskine Inlet
Aband
Aband
Byam Martin Channel
Pell Inlet
Bathurst Island
Emerg
Austin Channel
Emerg
76.0
75.0
0
50 km
Transverse Mercator
OPERATIONAL MAP 10
Bathurst and Melville Islands
PHYSICAL ENVIRONMENT & LOGISTICS
4-38
110.00
105.00
100.00

Operational Map 10 - *Bathurst and Melville Islands*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 10
Topographic Map - 68G, 78F, 78G, 78H, 79A
Hydrographic Chart - 7540, 7830, 7831, 7951
Video Tapes (reference number) - 01

ACCESS

In general the waters in this area have a very short season of open water (less than 4/10ths ice cover), ranging from 3 weeks in the northeast portion of Austin Channel to one week or less through Byam Channel and northward. Byam Martin Channel contains mostly multi-year ice that may break up during warm summers but seldom clears completely.

In Austin Channel, a weak residual current sets to the southeast. In the middle of the channel, Keene Bank shoal has a least depth of 3.1 m. In Byam Channel, the current floods northward at 15 cm/s and ebbs southward at up to 40 cm/s. Depending on the extent of break-up to the north, Byam Channel may be congested with multi-year ice through the open water season. Arnott, Pearse, and Boyer Straits, and Pell Inlet are generally clear of ice earlier and longer than Byam Martin Channel due to freshwater runoff as well as restricted access to old floes. The frequency and extent of old ice in Erskine Inlet is highly variable.

Anchorage is available in Bridport Inlet in 17 to 50 m (mud, clay). It has a tidal range of 1.3 m and is normally clear of ice for a few weeks.

Numerous abandoned airstrips are noted on this map, many related to previous oil and gas exploration in the area. At Rea Point, the base camp (inactive) of Panarctic Oils has a 1920 m x 60 m year-round gravel strip and, 1.5 km south, a landing beach with good approaches. The 900 m x 30 m tundra airstrip at Bent Horn (Cameron Island) has occasional use during summer months.

COUNTERMEASURES

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. The short open water season and incursion of ice floes during that time will severely limit the use of conventional containment and recovery techniques; rather in-situ burning should be considered for oil amongst or wind-herded against close pack ice. Dispersant application may be justified to reduce impacts on surface resources where conditions allow their effective use.

Shoreline protection techniques have limited applicability due to the likely presence of ice. When conditions allow, a number of inlets are identified for protection by exclusion booming in order to limit the extent and persistence of shoreline contamination.

The landing beach location at Rea Point would be an excellent site from which to base shoreline cleanup operations, offering good marine access, space for the temporary storage and/or incineration of collected oily material, and a nearby airstrip and camp facilities. Other shoreline access sites may be possible, particularly on each side of the Byam Martin Channel narrows where deep water is found close to low-lying shoreline. Any shoreline activity should take care not to disturb the many archaeological sites identified within this area.

SAFE HAVENS

A possible safe haven for vessel lightering and/or stabilization operations is Bridport Inlet which provides good holding in a well-sheltered anchorage. The inlet width of 3200 m allows some opportunity to contain any escaping oil.

Note that the coastal mapping of Areas 37 and 39 is incomplete as there are no video tapes or detailed coastal mapping available for these areas.

Note this region is characterized by relatively low biological and human activity. The effort originally assigned to mapping this area in detail was used instead to develop additional maps for Prince Regent Inlet.

Operational Map 10 - *Bathurst and Melville Islands*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
33	Allison Inlet	65.70
37	Western Bathurst Island	54.00
38	Byam Martin Island	64.50
39	Eastern Melville Island	68.20

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Important R

Ringed Seal RS

Goose Ge

Sea Duck SD

Gull Colony Gu

Environmental Description

R 37 Area 37 lies within the Polar Bear Pass National Wildlife Area, which is protected through the Canada Wildlife Act and is managed by CWS (43). There are 21 archaeological sites that have been identified in the area.

R 38 A quota of 12 polar bears on Melville Island is shared between Resolute Bay and Holman Island hunters. In recent years, the quota has been used for sport hunting. Every second year, Resolute Bay hunters use the coastal waters of Byam Martin Island and Byam Channel (14).

R 39 A number of archaeological sites have been identified along the southeast coast of Melville Island.

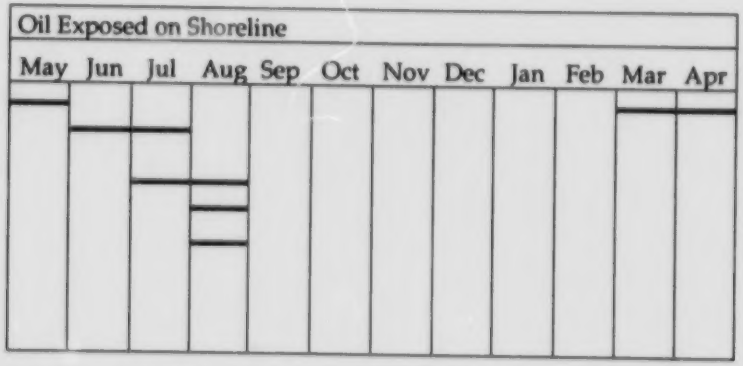
RS 33 High densities of ringed seals occur on coastal fast ice during June and July (18).

Gu 39 A colony of 70 pairs of Arctic terns nests on Dealy Island, off Bridport Inlet (49).

GeSD 39 During July and August, the southeast coast of Melville Island from Cape Bounty to Nelson Griffiths Point is used by moulting and brood-rearing flocks of brant, eiders, and oldsquaws (49).

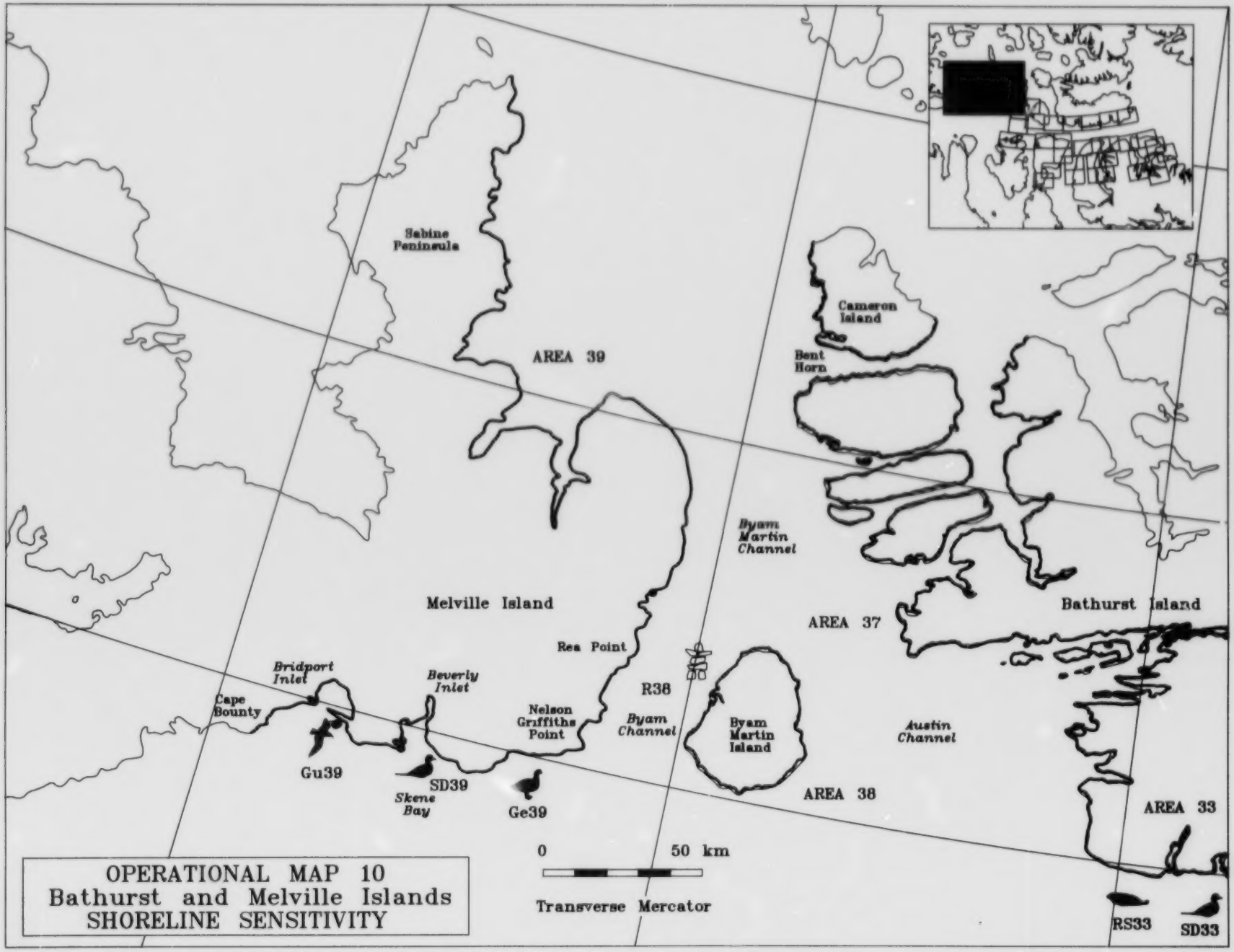
SD 33 Allison Inlet contained 800+ moulting oldsquaws when surveyed in August 1975 (1).

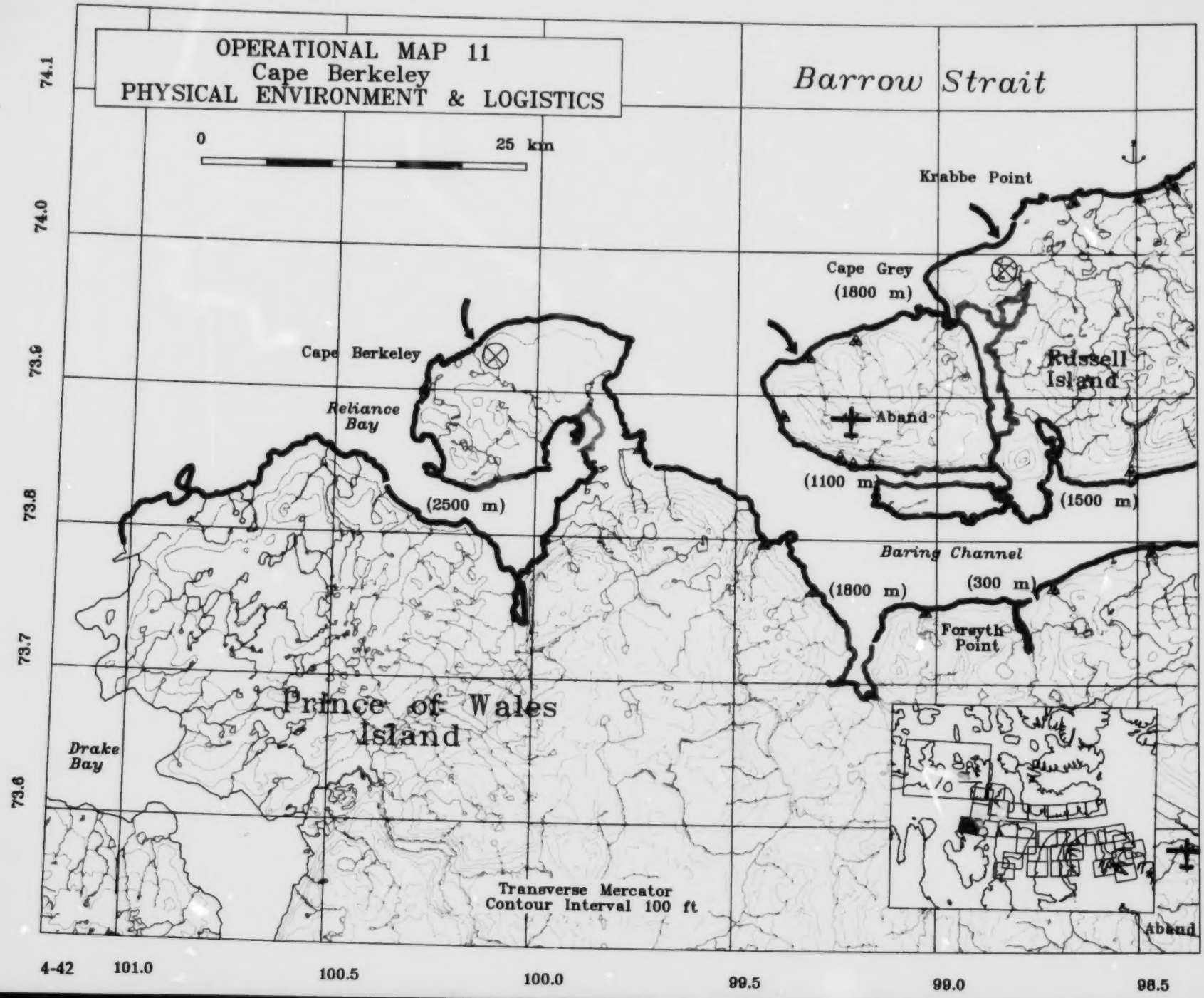
SD 39 King eiders and oldsquaw are widely distributed along all coasts of eastern Melville Island. They are most abundant along the south coast (49). The largest flocks of oldsquaws (<100) occur in bays (Bridport Inlet, Skene Bay, and Beverley Inlet).



Occurrence of Species and Resource Use

- R 38
- RS 33
- Gu 39
- GeSD 39
- SD 33
- SD 39


Sabine Peninsula
AREA 39
Cameron Island
Bent Horn
Byam Martin Channel
Melville Island
Bathurst Island
AREA 37
Rea Point
R38
Bridport Inlet
Beverly Inlet
Cape Bounty
Nelson Griffiths Point
Byam Channel
Byam Martin Island
Austin Channel
Gu39
SD39
Skene Bay
Ge39
AREA 38
AREA 33
RS33
SD33
0
50 km
Transverse Mercator
OPERATIONAL MAP 10
Bathurst and Melville Islands
SHORELINE SENSITIVITY
110.00
105.00
100.00


OPERATIONAL MAP 11
Cape Berkeley
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Barrow Strait
Krabbe Point
Cape Grey
(1800 m)
Cape Berkeley
Reliance
Bay
(2500 m)
Russell
Island
Aband
(1100 m)
(1500 m)
Baring Channel
(1800 m)
(300 m)
Forsyth
Point
Prince of Wales
Island
Drake
Bay
Transverse Mercator
Contour Interval 100 ft
Aband
74.1
74.0
73.9
73.8
73.7
73.6
101.0
100.5
100.0
99.5
99.0
98.5

Operational Map 11 - *Cape Berkeley*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 11
Topographic Map - 68C, 68D, 68E
Hydrographic Chart - 7829, 7830
Video Tapes (reference number) - 01

ACCESS

Nearshore depths in this map area are largely uncharted, and shoal water fringes much of the shoreline. A weak current sets east northeast along the north shore of Prince of Wales Island and Russell Island.

No protected anchorages are identified in this map area, although small craft may seek shelter in the entrance to Drake Bay and in Reliance Bay (when free of ice), and exposed anchorage may be possible off the northwest coast of Russell Island in 70 m or less (clay and mud). Shoreline access may be possible on the low hummocky shores northeast of Cape Berkeley and southwest of Krabbe Point.

In Baring Channel, the ice does not completely melt in a normal year and up to 2 tenths coverage of old ice is typical. The western entrance to the channel is normally blocked by heavy pack ice from Viscount Melville Sound although little ice enters the channel.

Two airstrips are located within this area: on the southwest corner of Russell Island is a 1580 m x 60 m abandoned gravel airstrip, and near Allen Lake some 25 km inland of Baring Channel is a 1680 m x 60 m abandoned gravel airstrip.

COUNTERMEASURES

Although the areas within this map are identified as being of relatively low sensitivity and would have a lower priority for countermeasures as opposed to other areas in the region, efforts should be made to limit the extent and persistence of oil contamination.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. During the open water season, in-situ burning may also be applicable at the entrances to bays and inlets that are ice-choked when oil is amongst or wind-herded against dense pack ice. Dispersant application may be justified where conditions allow their effective use in order to lessen the impact on surface resources.

In order to limit the extent of inshore contamination, and when not already blocked by ice, the entrance to Reliance Bay (2500 m), the bay close southwest of Cape Grey (1800 m), and the river outfall at Forsyth Point (300 m) could be sealed using exclusion booming techniques.

The highly exposed shorelines in this area may not require active cleaning efforts if not heavily contaminated. Hummocky shores that require cleaning may be accessed in several locations, and sites established for the temporary storage and/or incineration of collected oily material.

SAFE HAVENS

No good candidates for safe havens were identified in this map area. Reliance Bay appears to offer good protection and the entrance width of 2500 m may allow oil containment within the bay; however, it is uncharted and the numerous rivers emptying into it suggest shoal water. Closer inspection would be required to determine the bay's suitability.

Operational Map 11 - *Cape Berkeley*

Environmental Description

R 40-42 There are several sites of archaeological importance located along the coast from Cape Eden to Baring Channel on Prince of Wales Island.

Legend

*Shoreline Sensitivity**

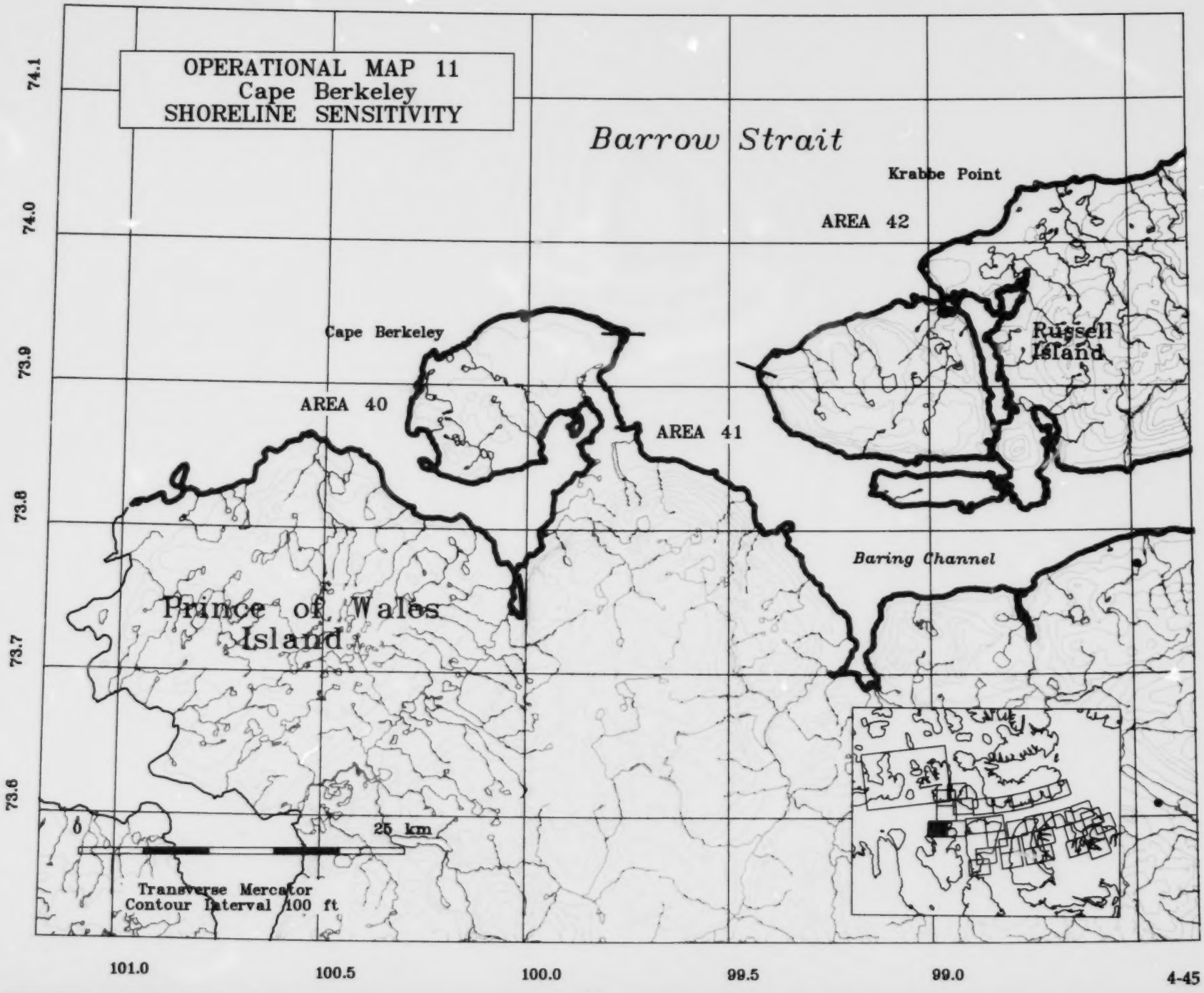
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

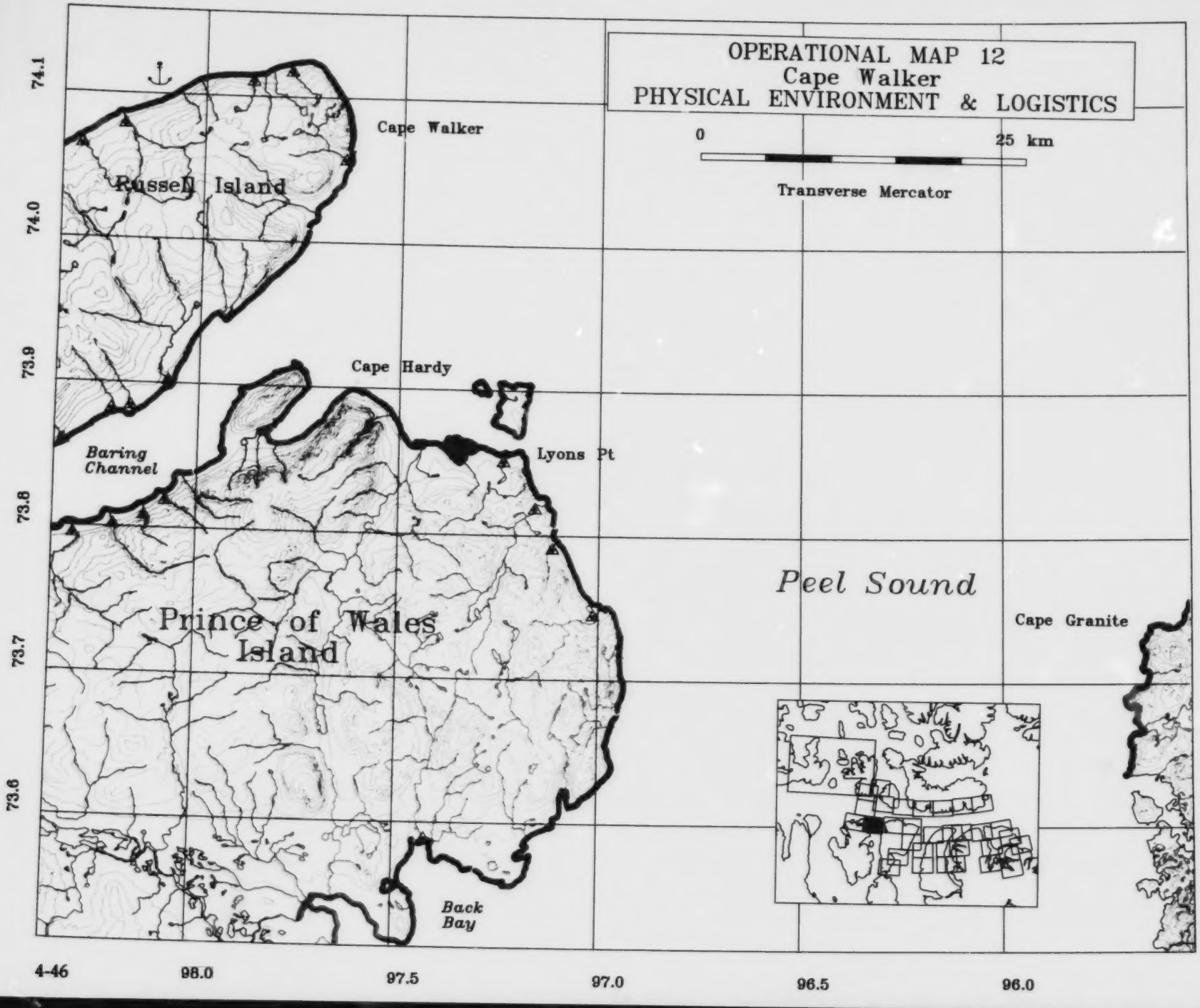
* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
40	Cape Berkeley	59.20
41	Baring Channel	64.80
42	Russell Island	69.10

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp


OPERATIONAL MAP 11
Cape Berkeley
SHORELINE SENSITIVITY
Barrow Strait
Krabbe Point
AREA 42
Cape Berkeley
Russell Island
AREA 40
AREA 41
Baring Channel
Prince of Wales Island
25 km
Transverse Mercator
Contour Interval 100 ft
74.1
74.0
73.9
73.8
73.7
73.6
101.0
100.5
100.0
99.5
99.0


OPERATIONAL MAP 12
Cape Walker
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Cape Walker
Russell Island
Cape Hardy
Baring Channel
Lyons Pt
Prince of Wales Island
Peel Sound
Cape Granite
Back Bay
74.1
74.0
73.9
73.8
73.7
73.6
98.0
97.5
97.0
96.5
96.0

Operational Map 12 - *Cape Walker*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 11
Topographic Map - 58C, 68D
Hydrographic Chart - 7503, 7569, 7829, 7830
Video Tapes (reference number) - 01

ACCESS

The northeast and southeast shores of Russell Island have a narrow foreshore that offers little opportunity for beach access. A single line of soundings through the east entrance and into Baring Channel indicate a least depth of 26 m. In Baring Channel, the ice does not completely melt in a normal year and up to 2 tenths coverage of old ice is typical. The western entrance (Map 11) to the channel is normally blocked by heavy pack ice from Viscount Melville Sound although little ice enters the channel.

In Peel Sound, a residual current of 15 cm/s runs south along the west shore and north along the east shore. A tidal range of 1.1 m (large) is reported for this area. During winter, Peel Sound is covered with continuous shorefast ice with clearing in the spring largely a matter of its melting in place (not always completed before freeze-up). The open water season is typically two-to-three weeks.

A 1680 m x 60 m abandoned gravel airstrip is located at Allen Lake, 22 km WNW of the head of Back Bay (Map 11).

No protected anchorages are identified in this map area although Baring Channel offers good shelter and adequate depths through its eastern entrance. Exposed anchorage may be possible off the northwest coast of Russell Island in 50 to 70 m (clay and mud), and Back Bay offers shelter for small craft.

Access over ice to this area from Resolute is reported during winter months.

COUNTERMEASURES

Considerable local knowledge exists about the nearshore waters and shorelines of the north part of Peel Sound and this should be accessed when planning countermeasures.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. The very short open water season in this area will severely limit the use of containment and recovery techniques; rather, in-situ burning should be considered when oil is amongst or wind-herded against close pack ice.

The short open water season will also limit the use of shoreline protection techniques. When ice conditions allow, consideration could be given to using diversion booming techniques to protect estuarine areas and limit the contamination of other inshore areas. Oil approaching the barrier/lagoon beaches close southeast of Cape Hardy could be diverted to adjacent less sensitive shores. Back Bay could be similarly protected by diverting approaching oil to exposed raised beaches near its entrance. Nearshore and shoreline operations must take care not to disturb the many seasonal camps and archaeological sites in this area.

SAFE HAVENS

No potential safe havens for vessel lightering/stabilization were identified within this map area. The closest candidate site is an uncharted inlet on Aston Bay (Map 13), entered 20 km northeast of Cape Granite.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 12 - *Cape Walker*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
41	Baring Channel	64.80
42	Russell Island	69.10
43	Lyons Point	70.10
44	Back Bay	97.70
45	Cape Granite	93.30

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Bearded Seal BS
- Ringed Seal RS

Environmental Description

R 41-45 Over 70 archaeological sites have been identified within Areas 41 to 45.

R 44 Permanent year-round outpost camps have been located near the mouth of the river draining Allen Lake and on the north shore of Back Bay (56). Ringed seals are hunted year-round, while belugas and bearded seals are hunted in the summer open water season. Ducks and geese are hunted in the area during summer. From June to September, anadromous char are netted along the shores of Back Bay and at the sea outlet of Allen Lake (14).

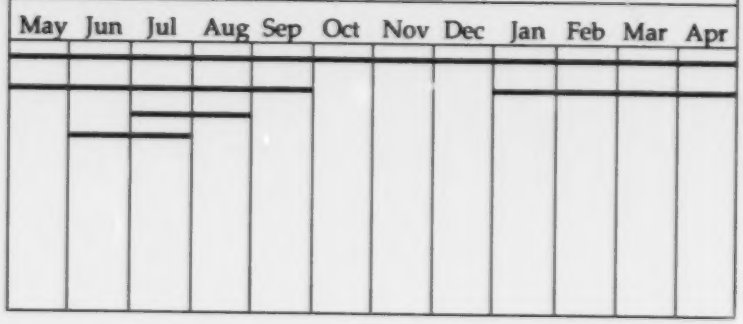
R 44-45 Traplines for Arctic fox have been known to follow the coastline from McClure Bay north through Aston Bay to Pressure Point during the winter period (34). Residents of Resolute Bay domestically harvest anadromous Arctic char in McClure Bay during the spring and summer open water season, and hunt whales between Pressure Point and Cape Granite during the open water season. A cabin is located in McClure Bay (56).

BS 44 During July and August, relatively high densities of bearded seals occur in Back Bay (18, 23).

RS 42-44 High densities of ringed seals occur on coastal fast ice during June and July (18, 65).

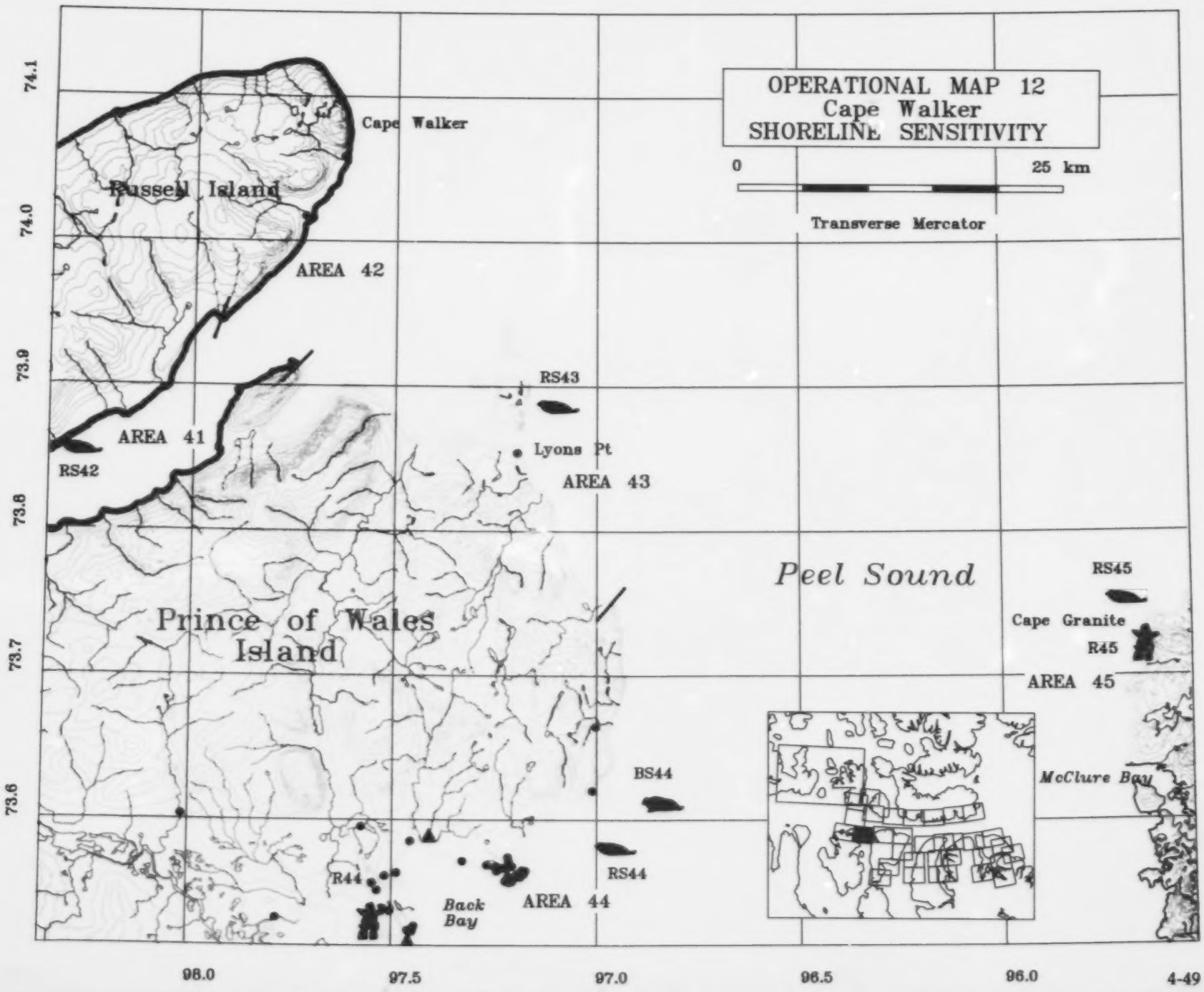
RS 45 Exceptionally high densities of ringed seals occur around northwestern Somerset Island during June and July (18, 19, 38, 39, 65).

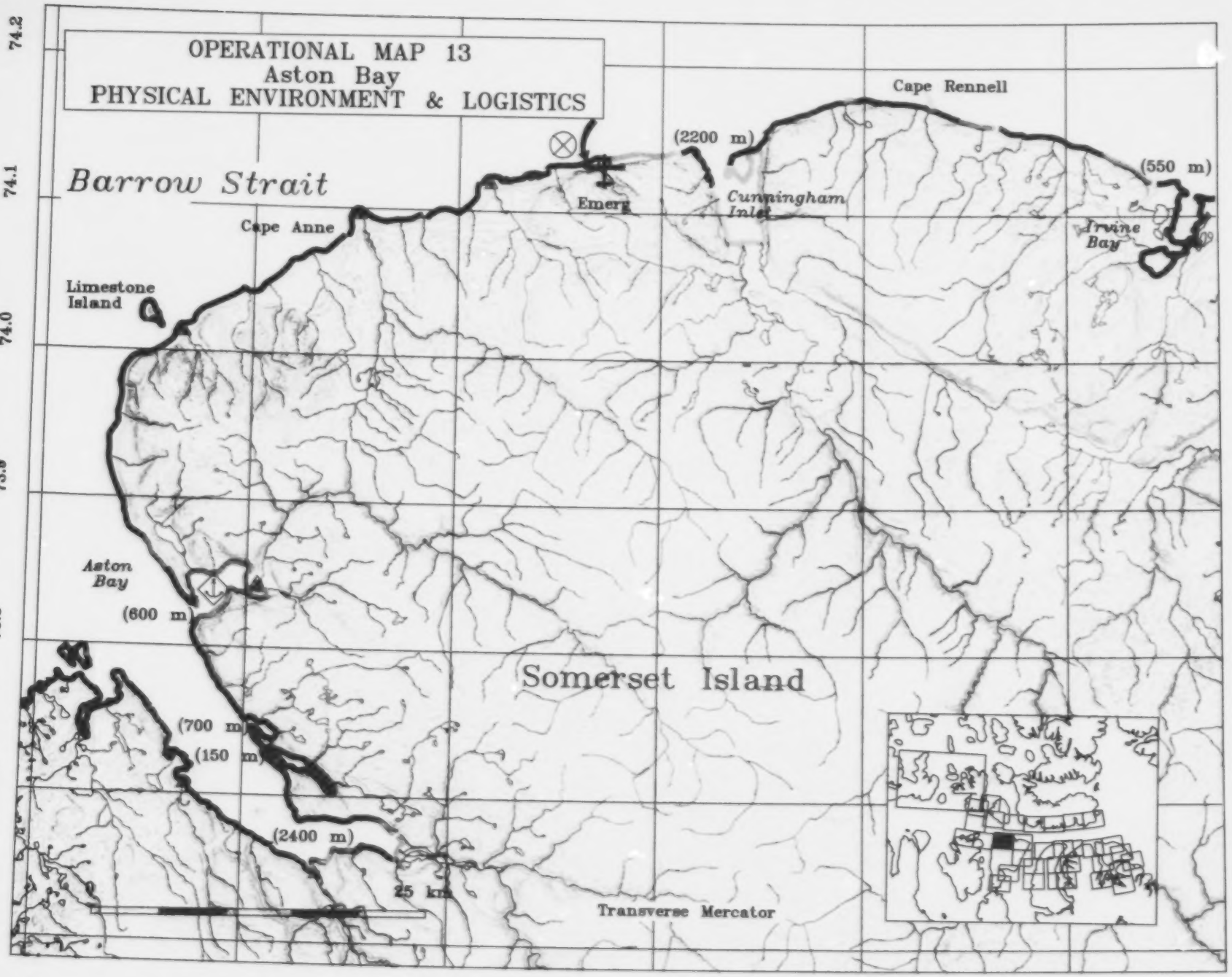
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

- R 44
- R 44-45
- BS 44
- RS 42-45


OPERATIONAL MAP 12
Cape Walker
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Cape Walker
Russell Island
AREA 42
AREA 41
RS42
RS43
Lyons Pt
AREA 43
Prince of Wales Island
Peel Sound
RS45
Cape Granite
R45
AREA 45
BS44
RS44
R44
Back Bay
AREA 44
McClure Bay
74.1
74.0
73.9
73.8
73.7
73.6
98.0
97.5
97.0
96.5
96.0


OPERATIONAL MAP 13
Aston Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Barrow Strait
Cape Rennell
(2200 m)
(550 m)
Emery
Cunningham Inlet
Irvine Bay
Cape Anne
Limestone Island
Aston Bay
(600 m)
Somerset Island
(700 m)
(150 m)
(2400 m)
25 km
Transverse Mercator
74.2
74.1
74.0
73.9
73.8
73.7
73.6
4-50
95.0
94.5
94.0
93.5
93.0

Operational Map 13 - *Aston Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 13
Topographic Map - 58C, 58F
Hydrographic Chart - 7503, 7569, 7829
Video Tapes (reference number) - 01

ACCESS

Aston Bay, although uncharted, appears to offer marine access. Shoal water is indicated near the head of the bay. A 150 cm/s tidal stream is reported between Limestone and Somerset Islands.

The north coast of Somerset Island is fronted by shoal water that extends about 1 km seaward.

The hummocky shore and narrow coastal plain in the vicinity of Cape Anne and eastward may allow marine access by shallow draft vessels. The entrance to Cunningham Inlet is narrow and very shallow (0.6 m charted).

There is a 1520 m x 15 m natural-surface runway (emergency status) near Cunningham Inlet.

COUNTERMEASURES

In this area, all efforts should be made to prevent oil from reaching the embayments which have poor marine access and may prove difficult to clean if oiled.

In ice concentrations of 6 tenths or greater, in-situ combustion of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended. Dispersant application may be ecologically justified in offshore and nearshore areas. Caution is advised in inshore waters with respect to the location and timing of belugas in the area.

In order to limit the extent of inshore contamination, the head of Aston Bay (2400 m), the three inlets on the northeast shore of Aston Bay (150, 700, and 600 m), Cunningham Inlet (2200 m), and Irvine Bay (550 m) could be sealed using exclusion booming. Alternatively, approaching oil may be diverted to less sensitive neighbouring coastline. This strategy may be particularly applicable to the exposed hummocky shores and raised beaches that border the entrance to Aston Bay.

The majority of the coastline in this area is highly exposed, either cliff or hummocky shore, and may not require active cleaning efforts if not heavily oiled. Beach access and land-based debris storage and incineration may be possible along the hummocky shore between Cape Anne and Cunningham Inlet.

SAFE HAVENS

Although uncharted, the most northerly of the three inlets in Aston Bay appears to be a candidate for a safe haven for vessel offloading and/or stabilization operations. It offers good shelter and its narrow entrance (600 m) offers an excellent opportunity to contain oil. If it is to be used a depth survey would be required.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 13 - *Aston Bay*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
46	Aston Bay	91.20
47	Limestone Island	70.30
48	Cunningham Inlet	87.70
49	Cape Rennell	91.10
50	Garnier Bay	100.10

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Important R
- Beluga Be
- Ringed Seal RS
- Beluga Habitat Be
- Char Ch
- Gull Gu
- Alcid Al

Environmental Description

R 45-50 This area is noted for its historical importance, particularly along the coast of Area 46 where 94 archaeological sites have been identified to date.

R 46 Traplines for Arctic fox have been known to follow the coastline from McClure Bay north through Aston Bay to Pressure Point during the winter period (34). Geese are hunted on the shoreline around Aston Bay by Resolute Bay residents during spring and summer (14). Arctic char are domestically fished in numerous bays and freshwater streams in the area. There are two seasonal and traditional hunting camps located in the Aston Bay area that are used by residents of Resolute Bay. A cabin is located in one of the camps (56). Aston Bay is noted for its excellent seal hunting (May to August).

R 48, 49 Resolute Bay hunters occasionally hunt caribou along the north shore of Somerset Island when ice conditions permit (usually from February until spring). Concentrations of polar bear kills have been reported by Resolute Bay hunters in the Cape Rennell to Cape Anne area in late winter and spring (31, 32). Some whale hunting may occur in Cunningham Inlet during the mid-July to mid-August period, although access is a problem.

Be 48 During mid-July to mid-August, large numbers of belugas occupy coastal waters between Cape Anne and Cunningham Inlet (18, 23). Cunningham Inlet is an important estuarine habitat where up to 2000 belugas congregate (18, 20, 32, 33, 63).

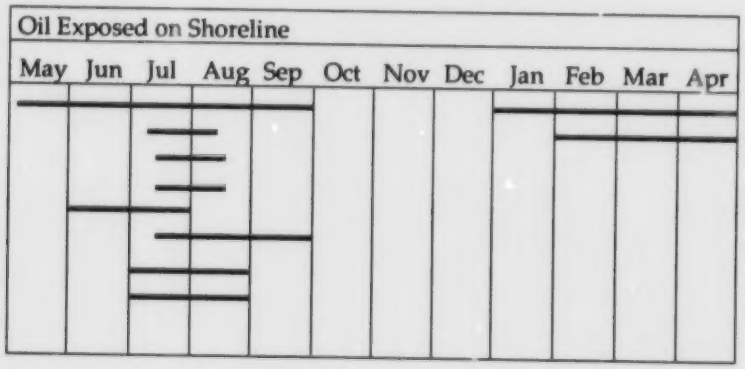
Be 49 The north coast of Somerset Island between Cunningham Inlet and Garnier Bay is a movement corridor for belugas from mid-July to mid-August (18). As many as a thousand belugas occasionally gather in Garnier Bay .

RS 46 Exceptionally high densities of ringed seals occur in Aston Bay during June and July (18, 19, 38, 39, 65).

Ch 49 During the open water season, a small population of anadromous Arctic char are known to feed and migrate through the Garnier Bay area (67).

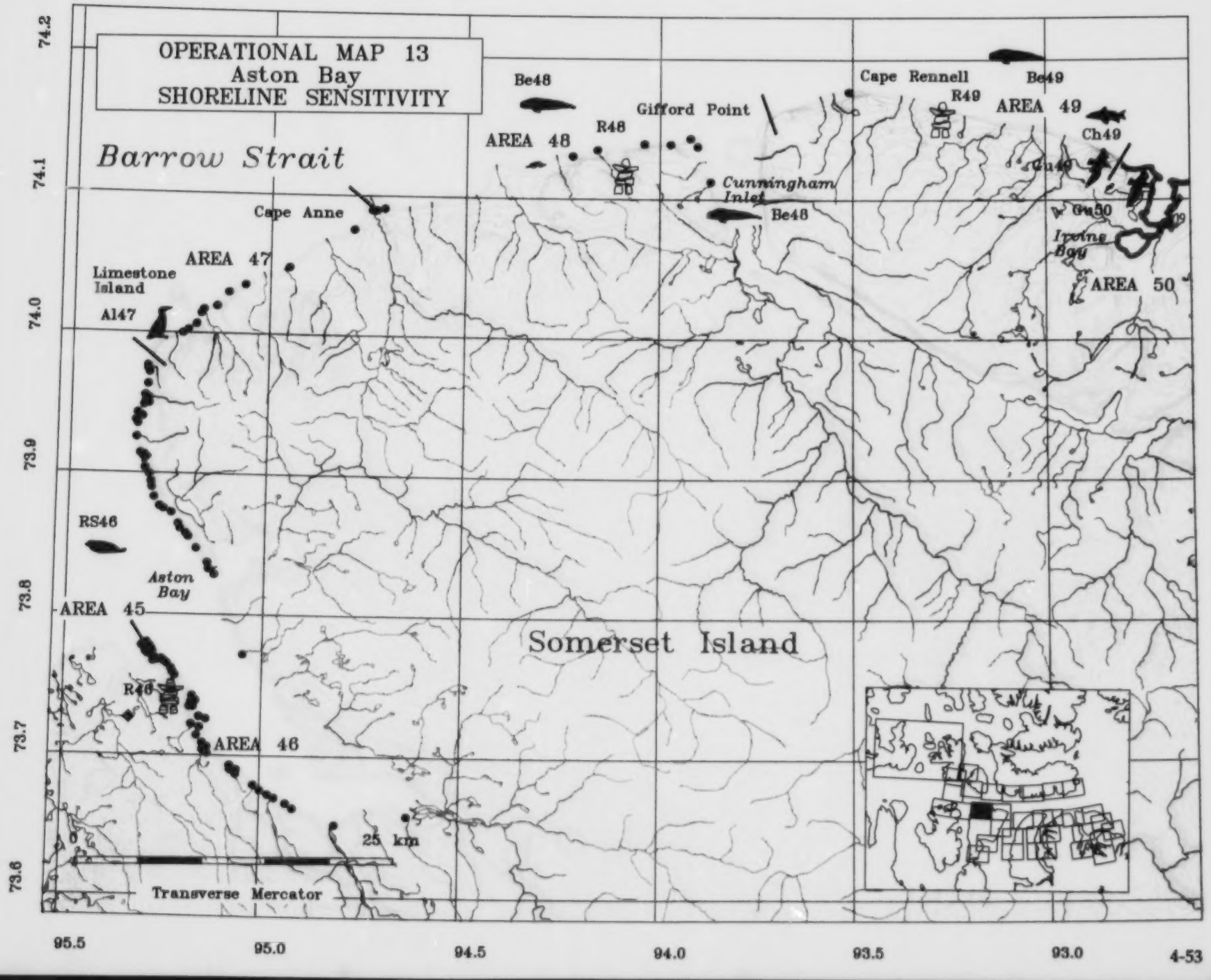
Gu 49, 50 From 30 to 100 pairs of kittiwakes nest on the cliffs immediately west of Irvine Bay (1, 9). Hundreds of glaucous gulls occur along this coast in August (1, 9).

Al 47 Limestone Island hosts a small colony of guillemots (200+ pairs) and another 100+ pairs nest near Pressure Point (30).



Occurrence of Species and Resource Use

- R 46
- R 48, 49
- Be 48
- Be 49
- RS 46
- Ch 49
- Al 47
- Gu 49, 50


OPERATIONAL MAP 13
Aston Bay
SHORELINE SENSITIVITY
Barrow Strait
Somerset Island
Be48
Gifford Point
AREA 48
R48
Cape Rennell
Be49
R49
AREA 49
Ch49
Cunningham Inlet
Be48
Cape Anne
Gu50
Irvine Bay
AREA 50
AREA 47
Limestone Island
Al47
RS46
Aston Bay
AREA 45
R46
AREA 46
0
25 km
Transverse Mercator
74.2
74.1
74.0
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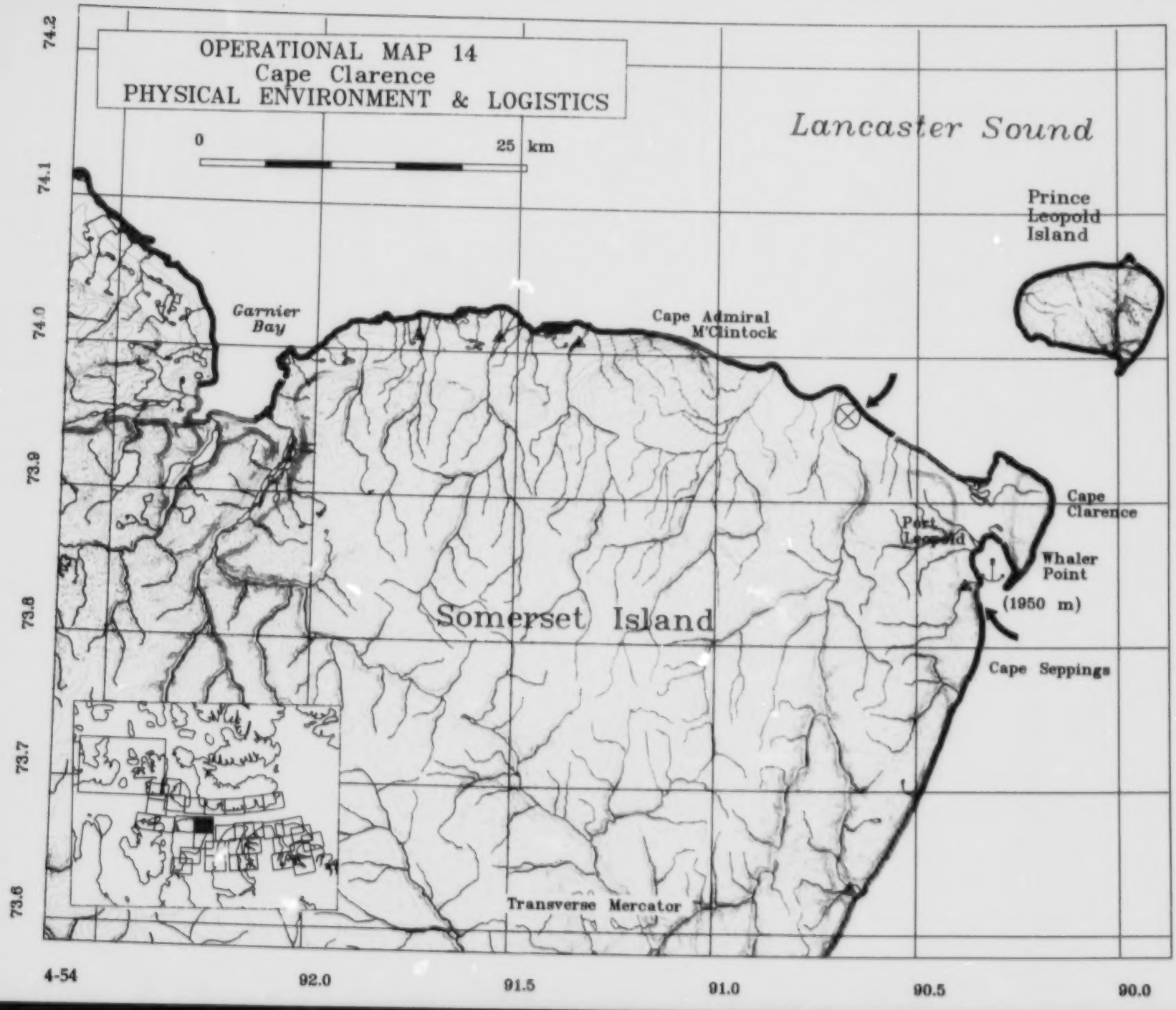
73.8
73.7
73.6
95.5
95.0
94.5
94.0
93.5
93.0


OPERATIONAL MAP 14
Cape Clarence
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Lancaster Sound
Prince Leopold Island
Garnier Bay
Cape Admiral M'Clintock
Cape Clarence
Port Leopold
Whaler Point
(1950 m)
Somerset Island
Cape Seppings
Transverse Mercator
74.2
74.1
74.0
73.9
73.8
73.7
73.6
92.0
91.5
91.0
90.5
90.0

Operational Map 14 - *Cape Clarence*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 13
Topographic Map - 58C, 58D, 58E, 58F
Hydrographic Chart - 7503, 7569
Video Tapes (reference number) - 01

ACCESS

Most of the Somerset Island coast is fronted by shoal water 1.5 to 3 km wide.

Garnier Bay is generally shallow with 3.5 m depths as far as 1.5 km offshore. Shallow draft boats may be able to gain access through a narrow channel on the east side.

Charted depths indicate that landing with shallow draft vessels may be possible at the river delta WSW of Prince Leopold Island. Prince Leopold Island is surrounded by vertical cliffs with a few shingle spits at the base of the cliffs.

Just south of Cape Clarence, anchorage is available in Port Leopold in 24 m although shelter is poor from northerly winds which blow across the isthmus. The shingle beaches in the port may allow shore access. Ice has been reported in the port in the open water season.

COUNTERMEASURES

All efforts should be made to prevent oil from reaching the area of Garnier Bay which is ranked as highly sensitive, offers poor marine access, and may prove difficult to clean if oiled.

In-situ burning of oil in ice, in conjunction with tracking oiled ice, in ice concentrations of 6 tenths or greater is recommended. In open water conditions, offshore containment for recovery or burning and/or dispersant application is recommended. Dispersant application in nearshore waters may be justified to protect waterfowl; however, dispersant use is not advised in the nearshore waters around Garnier Bay due to this area's importance to the beluga population.

The mouth of Port Leopold (1950 m) could be sealed using exclusion booming to prevent oil from entering or escaping. River deltas on the north coast of Somerset Island could be protected by divers in booming to direct oil to adjoining less sensitive raised beach and talus shoreline.

Cliff, talus, and raised beach shores that are exposed to wave action may not require active cleaning efforts if not heavily oiled. Poor marine access to barrier beaches and areas with river deltas may dictate cleanup during late winter/spring when access can be gained via ice and/or land, or, alternatively, a helicopter-supported operation. Lowland areas in the vicinity of Cape Clarence and immediately westward could be investigated as potential sites for debris storage and/or incineration; consultation with archaeological experts must precede any such actions due to the importance of this area.

SAFE HAVENS

No suitable safe havens were identified within a 100 km radius of this map area.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 14 - *Cape Clarence*

Environmental Description

R 50 Resolute Bay hunters occasionally hunt caribou along the north shore of Somerset Island when ice conditions permit (usually from February until spring).
R 52 The Canadian Parks Service has designated Port Leopold-Whaler Point as a National Site of Historic Interest (8).
R 53 The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island.
R 54 Five archaeological sites are located along this stretch of coastline. A cabin and traditional, seasonal campsite is located at Port Leopold and Cape Clarence. Walrus are hunted in the Cape Clarence area in late spring by Resolute Bay residents (14).
Be 50 The north coast of Somerset Island between Cunningham Inlet and Garnier Bay is a movement corridor for belugas from mid-July to mid-August (18). As many as a thousand belugas occasionally gather in Garnier Bay .
Ch 50, 51 Garnier Bay provides summer feeding habitat and a migration corridor for small populations of anadromous Arctic char (67).
Fu 52 In early August, thousands of fulmars occur along the coast east of Cape Admiral M'Clintock and near Cape Clarence (9).
FuAlGu 53 The largest and most diverse seabird community in the study area is located on Prince Leopold Island. The colony comprises 124,000 fulmars, 172,000 murres, 58,000 kittiwakes, 4000+ black guillemots, and 400+ glaucous gulls (55). A large proportion of the seabirds that nest in eastern Lancaster Sound and Barrow Strait nest on this island: 100% of murres, 95% of kittiwakes, at least 40% of guillemots, and 40% of fulmars (54).
Fu 54 From mid-July to early September, hundreds of fulmars occur along the coast from Cape Clarence to Elwin Bay (54).
Gu 51 Hundreds of glaucous gulls occur along this coast during August (1, 9).
Gu 52 During August, hundreds of kittiwakes occur from Cape Admiral M'Clintock to Prince Leopold Island (9). The northeast coast of Somerset Island has the highest concentration of glaucous gulls in Barrow Strait during June of most years (4).
Gu 54 In June, and again in August, hundreds of kittiwakes (140/km2) occur from Cape Clarence to Elwin Bay (1, 9). Most are concentrated between Cape Clarence and Cape Seppings.
Al 54 During mid- to late August, hundreds of guillemots frequent the coast from Cape Clarence to Batty Bay (1).
SD 50, 51 Hundreds of oldsquaws gather at the fast ice edge in June. From mid-July to late August thousands of eiders and oldsquaws moult in the Garnier Bay area (1).

Legend

*Shoreline Sensitivity**

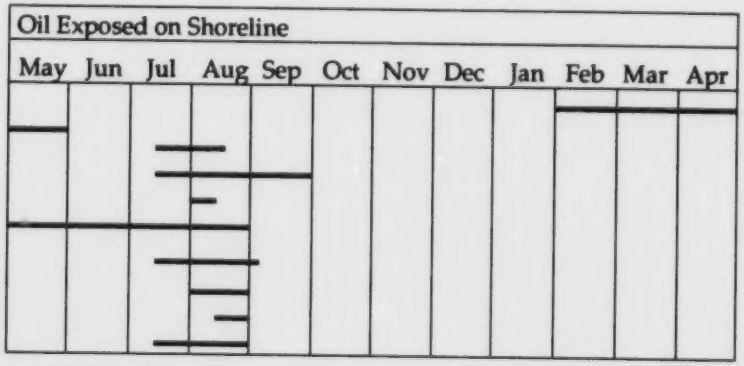
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

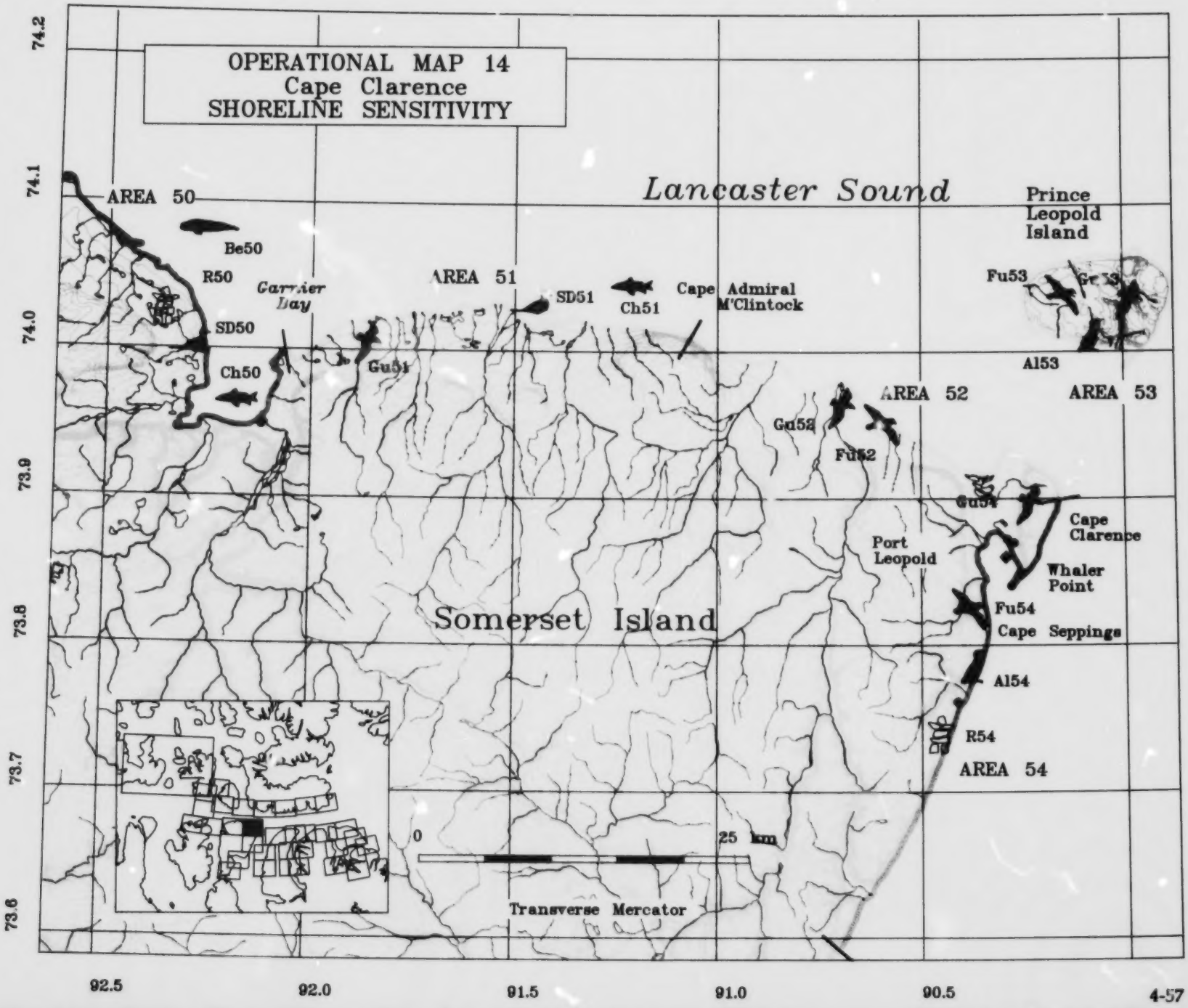
No.	Name	Sensitivity Ranking
50	Garnier Bay	100.10
51	Cape Admiral M'Clintock	74.80
52	Cape Clarence	70.50
53	Prince Leopold Island	91.10
54	Cape Seppings	105.60

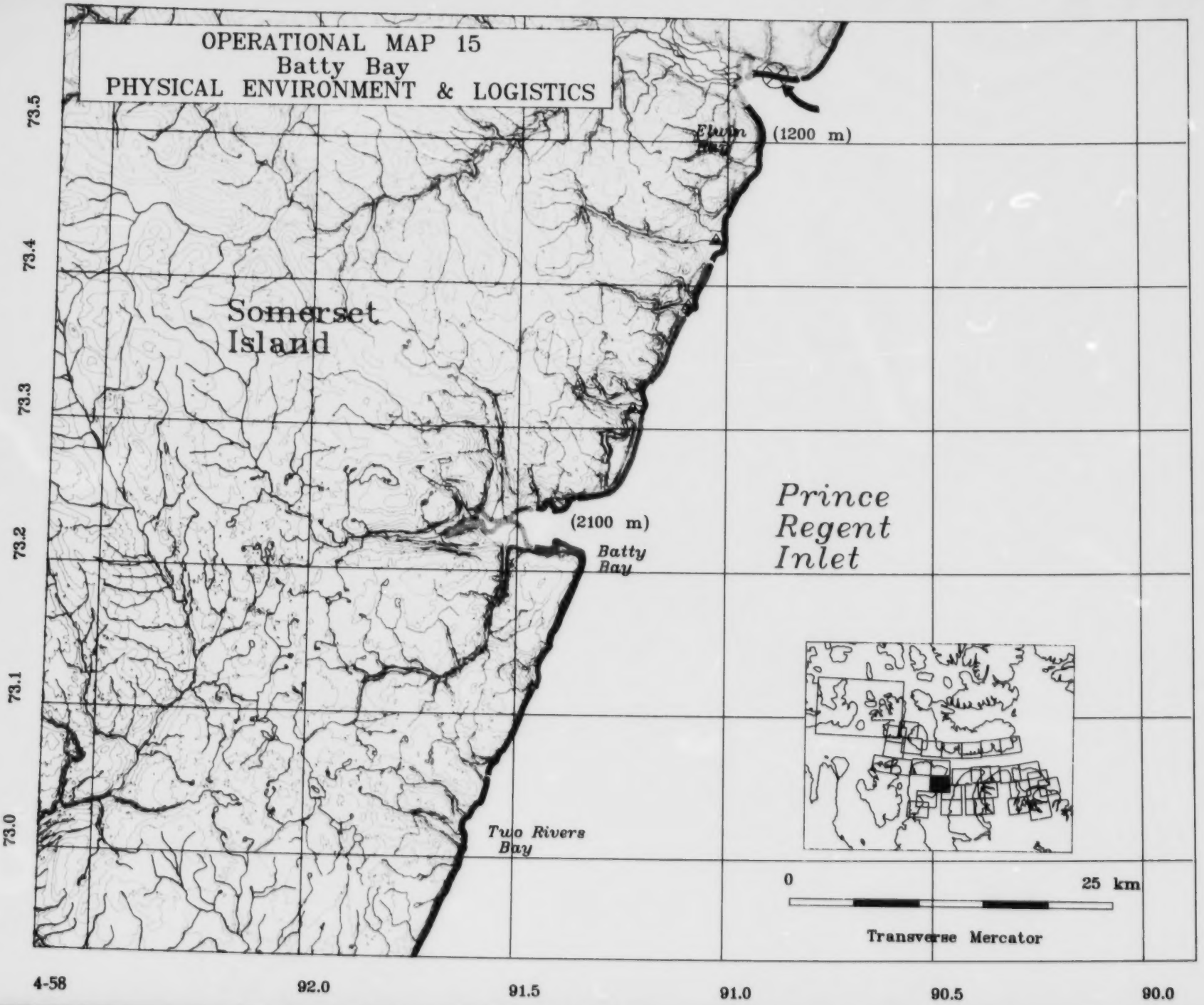
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp



Occurrence of Species and Resource Use

R 50
R 54
Be 50
Ch 50, 51
Fu 52
FuAlGu 53
Fu 54
Gu 51, 52
Al 54
SD 50, 51


OPERATIONAL MAP 14
Cape Clarence
SHORELINE SENSITIVITY
Lancaster Sound
AREA 50
Be50
R50
Carrier Bay
SD50
Ch50
AREA 51
Gu51
SD51
Ch51
Cape Admiral M'Clintock
Prince Leopold Island
Fu53
Gr53
Al53
AREA 52
AREA 53
Gu52
Fu52
Gu54
Cape Clarence
Port Leopold
Whaler Point
Somerset Island
Fu54
Cape Seppings
Al54
R54
AREA 54
0
25 km
Transverse Mercator
74.2
74.1
74.0
73.9
73.8
73.7
73.6
92.5
92.0
91.5
91.0
90.5


OPERATIONAL MAP 15
Batty Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Somerset Island
Prince Regent Inlet
(1200 m)
(2100 m)
Batty Bay
Two Rivers Bay
0
25 km
Transverse Mercator
73.5
73.4
73.3
73.2
73.1
73.0
92.0
91.5
91.0
90.5
90.0

Operational Map 15 - *Batty Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 13
Topographic Map - 58D
Hydrographic Chart - 7503, 7569, 7851
Video Tapes (reference number) - 01

ACCESS

Many of the waters in this area have not been extensively surveyed; mariners should exercise caution particularly near the coast. In general, deep water exists along this coast with the 274 m contour about 5 km offshore. The current is generally southward; no velocity is reported.

The coastline in this area is predominantly cliff and talus coast except where cut by river valleys and offers few opportunities for beach access. Elwin Bay is not charted for depths; however, its north shore is a possible landing site for small craft and could be investigated. Batty Bay is reported to have a least depth of 5.5 m in the channel and offers good shelter for small craft; tides range from 1.2 to 2.1 m.

COUNTERMEASURES

In offshore and nearshore waters, in ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning and/or dispersant application is recommended. Dispersant use is not advised in nearshore areas, particularly embayments, due to potential impacts on beluga feeding grounds.

Elwin Bay (1200 m) and Batty Bay (2100 m) should be protected by exclusion booming to prevent oil from reaching inshore areas that are poorly accessed and more difficult to clean. Diversion booming to direct oil to neighbouring talus coasts may also be possible in each case in the event of high easterly winds.

The cliff and talus coastline that predominate this area may not require active cleaning efforts if not heavily oiled. As noted, access is generally poor in this area although the north shore of Elwin Bay may be suitable as a site for the temporary storage and incineration of debris.

SAFE HAVENS

No suitable safe havens could be identified in this or immediately adjacent map areas. The closest potential sites for emergency tanker operations are 65 km east of Batty Bay on the Brodeur Peninsula (Baffin Island) where both Port Bowen and Jackson Inlet (Map 20) are noted as possibilities.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 15 - *Batty Bay*

Environmental Description

Be 55 Elwin Bay is historically and presently an important estuarine habitat for belugas from mid-July to mid-August (18, 33, 57).

Gu 56 Up to 2000 pairs of kittiwakes nest on coastal ledges from Batty Bay to Two Rivers Bay (1).

Al 55, 56 A colony of 100 pairs of guillemots is located south of Elwin Bay. Up to 1600 pairs of guillemots nest in rock crevasses from Batty Bay to Fury Point (1).

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

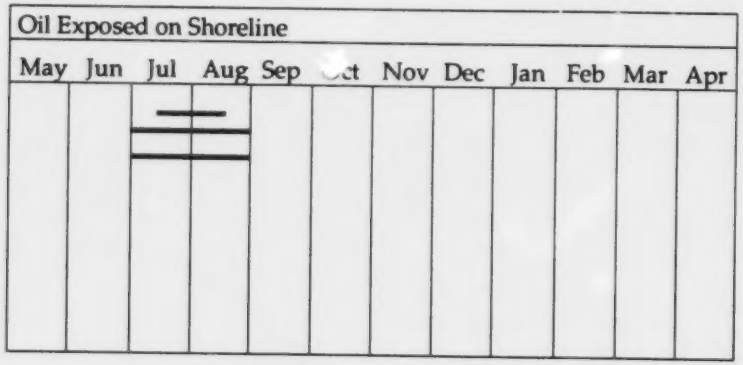
No.	Name	Sensitivity Ranking
55	Elwin Bay	87.50
56	Batty Bay	78.00
57	Fury Point	74.10

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Beluga Habitat Be

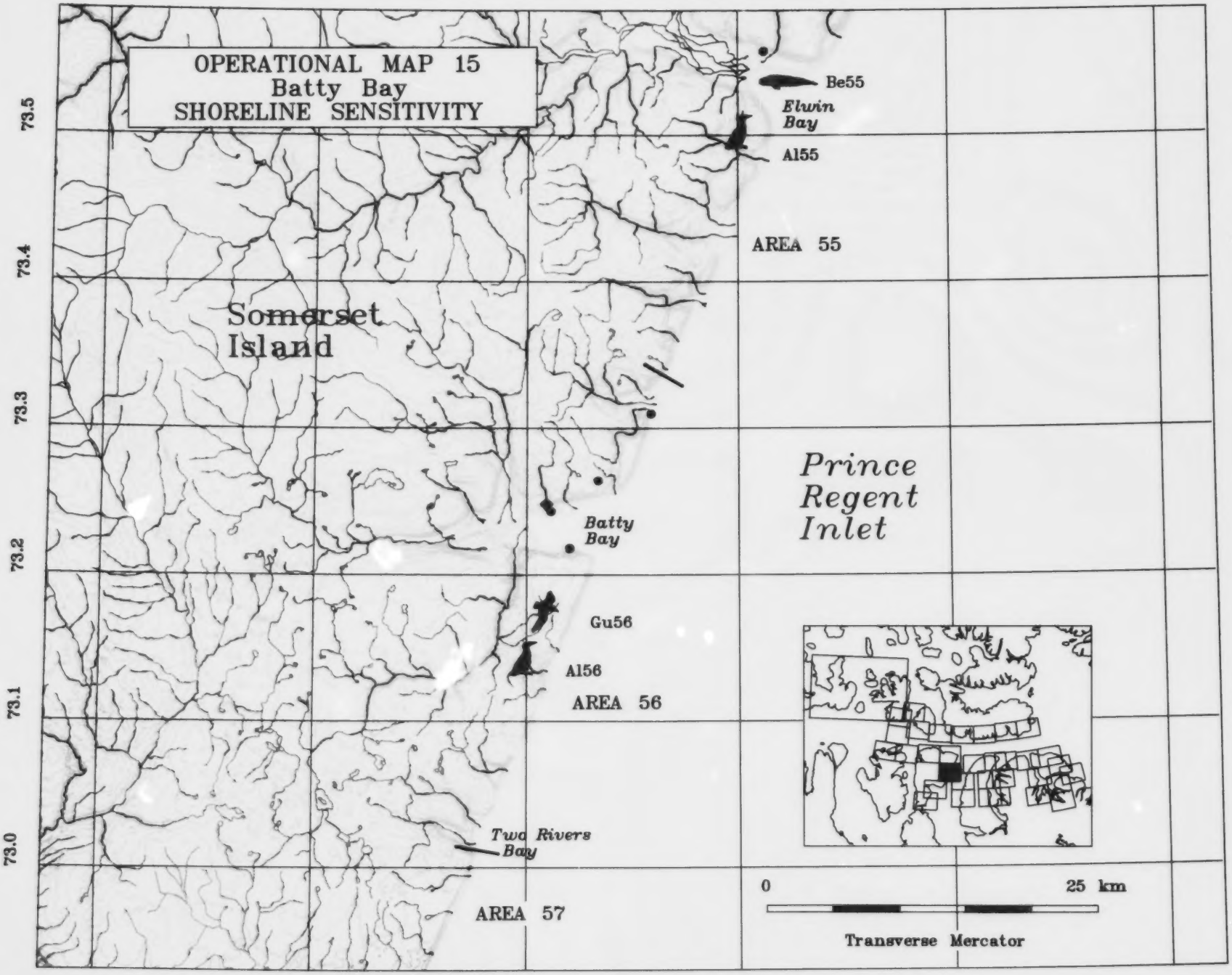
Gull Gu

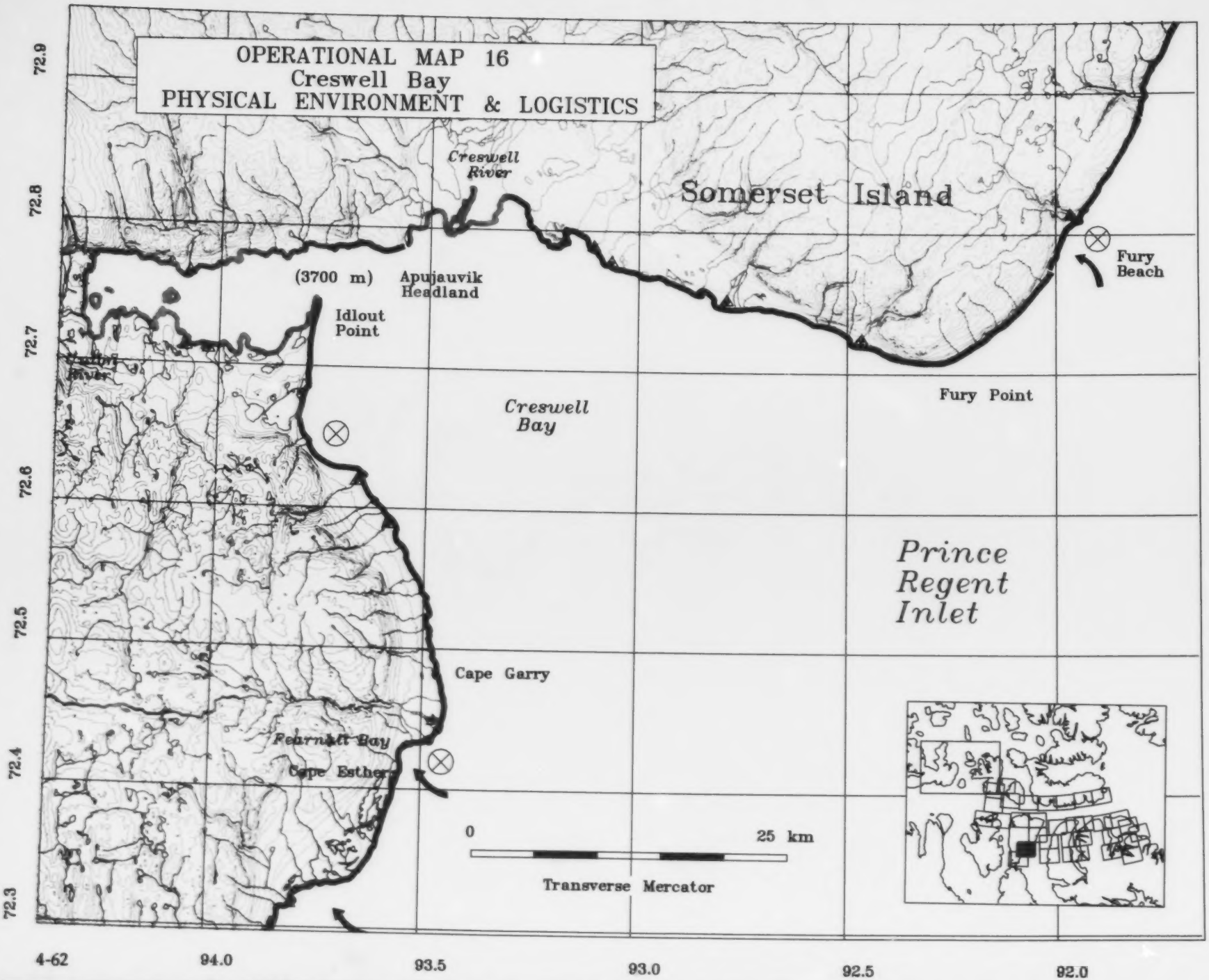
Alcid Al



Occurrence of Species and Resource Use

Be 55
Gu 56
Al 55, 56


OPERATIONAL MAP 15
Batty Bay
SHORELINE SENSITIVITY
Be55
Elwin Bay
Al55
AREA 55
Somerset Island
Prince Regent Inlet
Batty Bay
Gu56
Al56
AREA 56
Two Rivers Bay
AREA 57
0
25 km
Transverse Mercator
73.5
73.4
73.3
73.2
73.1
73.0
92.5
92.0
91.5
91.0
90.5


OPERATIONAL MAP 16
Creswell Bay
PHYSICAL ENVIRONMENT & LOGISTICS
Creswell River
Somerset Island
Fury Beach
(3700 m)
Apujauvik Headland
Idlout Point
Fury Point
Creswell Bay
Prince Regent Inlet
Cape Garry
Cape Esther
0
25 km
Transverse Mercator
72.9
72.8
72.7
72.6
72.5
72.4
72.3
4-62
94.0
93.5
93.0
92.5
92.0

Operational Map 16 - *Creswell Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 17
Topographic Map - 58A, 58B, 58D
Hydrographic Chart - 7503, 7740, 7830
Video Tapes (reference number) - none

ACCESS

Deep water (190 m) lies within 3 km of Fury Beach which offers a potential landing site for small vessels. Between Fury Beach and Fury Point, landing boats on the narrow coastal strip may be possible. Creswell Bay has depths of 99 m at its mouth and 11 to 50 m centrally within the bay west of Idlout Point. Shoal areas extend from the north and south sides of Creswell Bay and 2.5 km NNE of Idlout Point; these shoals may prohibit landing or access to the inner bay to all but small boats. South of Creswell Bay, landing for small vessels may be available in Fearnall Bay and south of Cape Esther. Disturbance of beach areas must be minimized since the area contains a high density of archaeological sites.

An abandoned, natural-surface runway (1220 m x 15 m) exists at the Lang River about 60 km south of Creswell Bay. Fixed-wing landing may also be possible on the beach near the Union River outfall. Winter access from Resolute by snowmobile to Creswell Bay is available from November to June/July.

COUNTERMEASURES:

Considerable local knowledge presumably exists about the waters of Creswell Bay and the Union and Creswell Rivers and this knowledge should be accessed when planning countermeasures.

All efforts should be made to prevent oil from reaching the area of Creswell Bay.

In-situ burning of oil in ice, in conjunction with tracking oiled ice, in offshore and nearshore waters in ice concentrations of 6 tenths or greater is recommended. In open water conditions offshore, containment for recovery or burning and/or dispersant application is recommended. In Creswell Bay dispersant use is cautioned against because of the unknown effect of dispersed oil on the highly important beluga population; containment for recovery or burning or diversion into less sensitive shores (raised beaches etc.) is recommended. In nearshore areas outside Creswell Bay, containment for recovery or burning is recommended and dispersant use seems justified to protect waterfowl concentrations.

The inner portion of Creswell Bay and the Union River outfall should be protected by exclusion booming from Idlout Point to the north shore (3700 m). In high easterly winds, diversion booming to direct oil to the north shore may be required at this location. The Union River outfall and those of several other rivers on the north shore could be protected by exclusion or diversion booming depending on conditions.

Cliff shoreline, raised beaches, and talus coasts that are not heavily contaminated may not require active cleaning efforts. Due to the high density of archaeological sites in this area, no shoreline cleaning should be undertaken without first consulting archaeological experts; disturbance of shore areas during all operations must be minimized to the greatest extent possible. Temporary storage of collected oily material and/or its incineration may be possible at Fearnall Bay, Fury Beach, and south of Idlout Point after consultation with archaeological experts.

SAFE HAVENS

No appropriate safe havens could be identified within a 100 km radius of Creswell Bay.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 16 - *Creswell Bay*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
57	Fury Point	74.10
58	Creswell Bay	137.90
59	Inner Creswell Bay	135.80
60	Cape Garry	130.30
61	Fearnall Bay	89.20

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Highly Important R
- Beluga Be
- Bowhead Bh
- Char Ch
- Cod Co
- Beluga Habitat Be
- Fulmer Fu
- Gull Gu
- Alcid Al
- Goose Ge
- Sea Duck SD

Environmental Description

R 57-61 Some 107 archaeological sites have been identified along the eastern coast of Somerset Island from Area 57 to 61.

R 58 Creswell Bay residents hunt belugas, ducks, and geese along the north shore during summer. A traditional, seasonal camp is located at Apujauvik Headland (14, 22).

R 59, 60 The inner bay and its shoreline are important to Creswell Bay hunters for narwhal, belugas, and ringed and bearded seals during the spring and open water period. It is also the site of the Creswell Bay outpost camp and at least three other seasonal camps. The Union River has an anadromous char run, which supports active spring, summer, and fall domestic fishing in the river and the inner bay. This char population is commercially fished in the north end of Stanwell-Fletcher Lake, usually in the fall (14). A traditional campsite is located at Cape Garry.

Be 58 The north shore of Creswell Bay is the most important estuarine concentration area for belugas in the High Arctic (18, 66). As many as 4000 congregate there from mid-July to mid-August.

Be 59 During August and early September in some years, large numbers of belugas move into inner Creswell Bay to feed on Arctic cod (24).

Be 60, 61 From mid-July to mid-August, large numbers of belugas travel and forage along the south coast of Creswell Bay and the southeast coast of Somerset Island (18).

Bh 60, 61 Small numbers of bowheads have been observed along the coast near Cape Garry in recent years (18). Historically, this area was an important whaling ground (48).

ChCo 58-60 During the open water season, Creswell Bay provides an important feeding habitat and a migration corridor for large populations of Arctic char, which support an important subsistence fishery. Arctic cod also occur sporadically in the bay from August through to freeze-up.

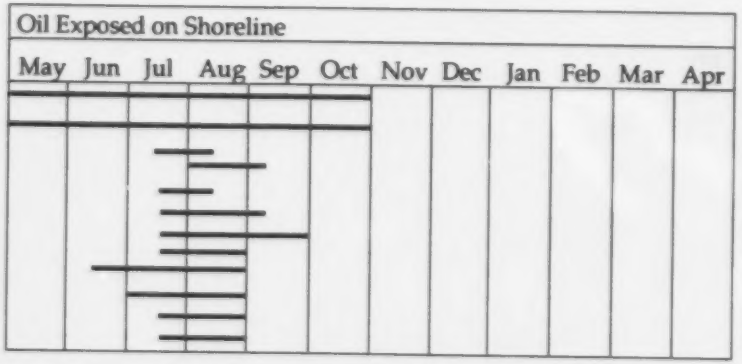
Fu 58-60 The offshore waters of inner and outer Creswell Bay are important for marine birds such as fulmars, kittiwakes and eiders. In late August 1974, over 10,000 fulmars were present in outer Creswell Bay and 1500 in inner Creswell Bay (1).

Gu 58, 59 In August, hundreds of kittiwakes frequent the tide flats at the mouth of the Creswell River (1, 9). 100+ glaucous gulls nest in colonies and in the thermokarst area of Creswell Bay (1).

Al 57 Up to 1600 pairs of guillemots nest in rock crevasses from Batty Bay south to Fury Point (1).

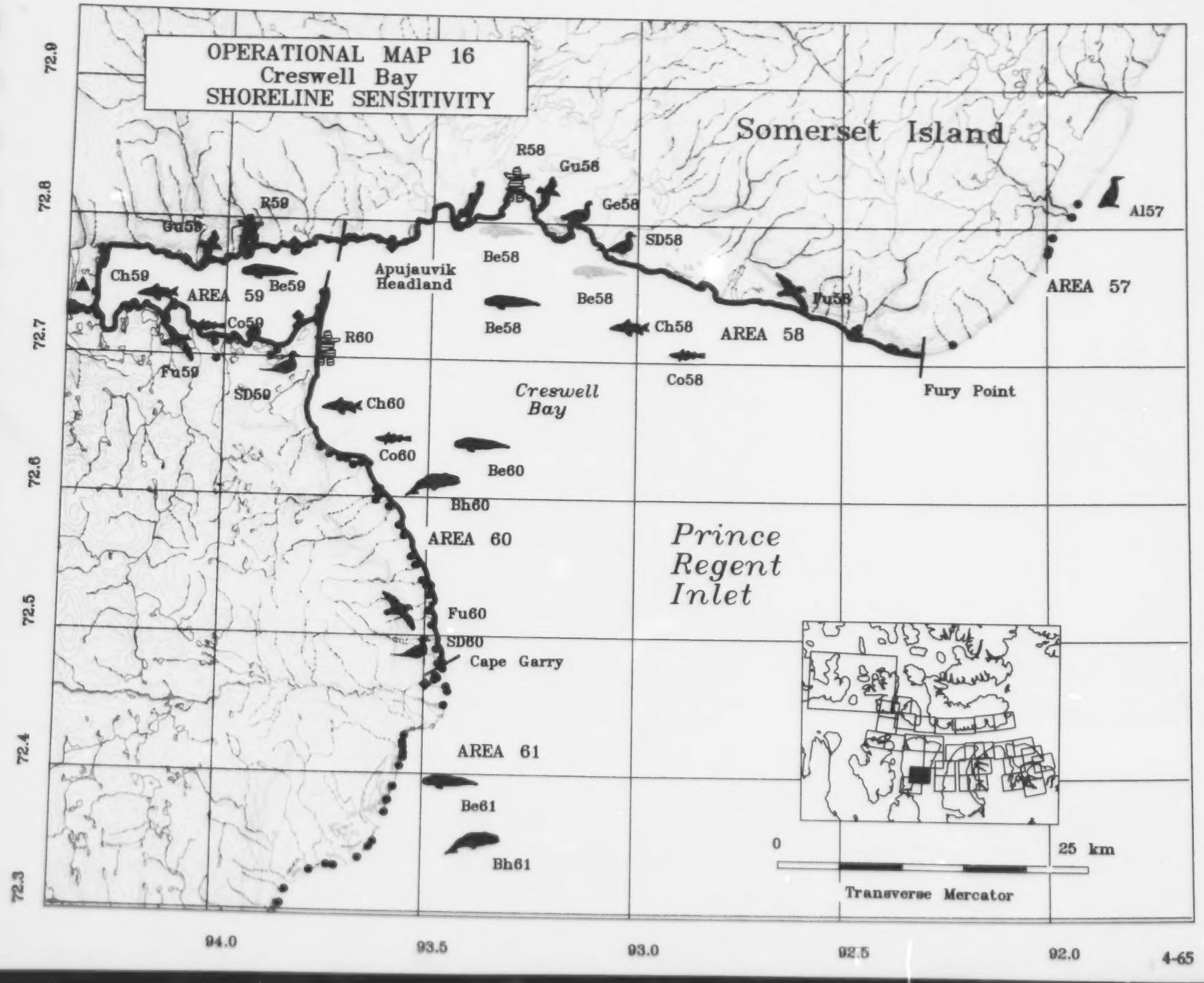
Ge 58 Approximately 2700 snow geese breed in the Creswell Bay thermokarst. During late July and August, many of these geese forage along the north coast of Creswell Bay (1).

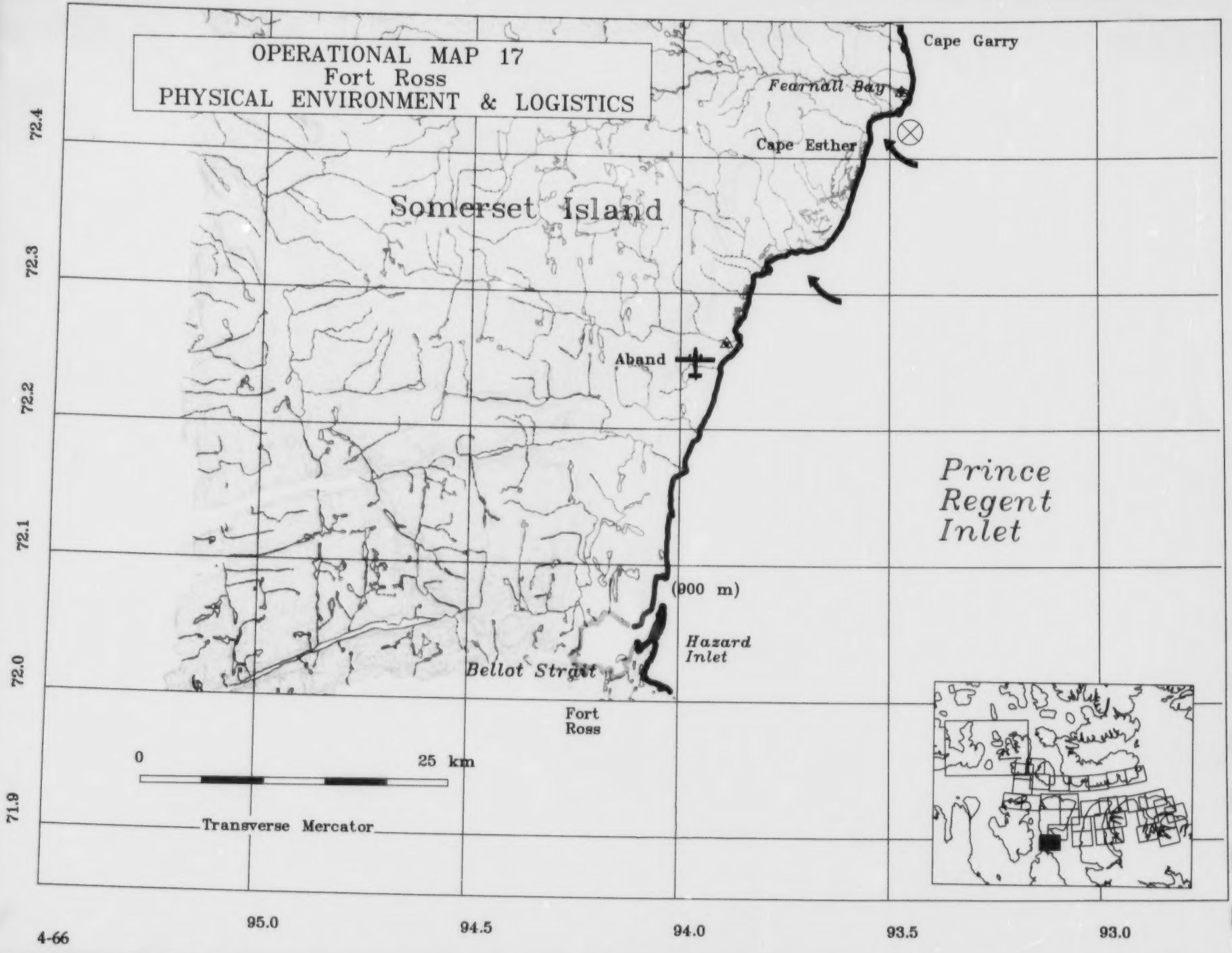
SD 58-60 From mid-July to late August, thousands of eiders and hundreds of oldsquaws moult in the coastal waters of Creswell Bay and south to Bellot Strait (1).



Occurrence of Species and Resource Use

R 58
R 59, 60
Be 58
Be 59
Be 60, 61
Bh 60, 61
ChCo 58-60
Fu 58-60
Gu 58, 59
Al 57
Ge 58
SD 58-60


OPERATIONAL MAP 16
Creswell Bay
SHORELINE SENSITIVITY
Somerset Island
R58
Gu58
Ge58
SD58
A157
R59
Gu59
Ch59
AREA 59
Be59
Apujauvik
Headland
Be58
Be58
Be58
Fu58
AREA 57
Co59
R60
Ch58
AREA 58
Fu59
SD59
Co58
Fury Point
Ch60
Creswell
Bay
Co60
Be60
Bh60
AREA 60
Prince
Regent
Inlet
Fu60
SD60
Cape Garry
AREA 61
Be61
Bh61
0
25 km
Transverse Mercator
72.9
72.8
72.7
72.6
72.5
72.4
72.3
94.0
93.5
93.0
92.5
92.0


OPERATIONAL MAP 17
Fort Ross
PHYSICAL ENVIRONMENT & LOGISTICS
Cape Garry
Fearnall Bay
Cape Esther
Somerset Island
Aband
Prince
Regent
Inlet
(900 m)
Hazard
Inlet
Bellot Strait
Fort
Ross
0
25 km
Transverse Mercator
72.4
72.3
72.2
72.1
72.0
71.9
95.0
94.5
94.0
93.5
93.0
4-66

Operational Map 17 - *Fort Ross*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 17
Topographic Map - 58B
Hydrographic Chart - 7503, 7552, 7740
Video Tapes (reference number) - none

ACCESS

There is very little nearshore bathymetry charted for this area.

An abandoned natural surface runway, 1520 m x 15 m, exists at Lang River, approximately 2 km inland.

Hazard Inlet, although uncharted, is reported to have depths of 7 m in its entrance and up to 35 m within the inlet (depths are by spot soundings only). The entrance is much reduced in width due to shoals.

Both Fearnall Bay and the delta area 15 km southward may allow landing by smaller vessels. Disturbance of beach areas must be minimized due to the high number of archaeological sites in the area.

COUNTERMEASURES

In offshore and nearshore waters in ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions offshore and nearshore, containment for recovery or burning is recommended. Dispersant application in offshore and nearshore areas seems to be justified to protect waterfowl populations although caution is advised in inshore waters with respect to the important whale population. Expert advice would be required regarding specific timing and locations of beluga at the time of the spill.

The entrance to Hazard Inlet (900 m) could be sealed using exclusion booming techniques in order to limit inshore contamination and subsequent cleanup requirements.

Due to the high number of archaeological sites in the area, no shoreline cleaning should be undertaken without consultation with archaeological experts. Temporary storage of collected oily material and/or its incineration may be possible at Fearnall Bay and the delta area 15 km southwards after expert consultation in each case.

SAFE HAVENS

No appropriate safe havens could be identified within 100 km of this map area.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 17 - *Fort Ross*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
60	Cape Garry	130.30
61	Fearnall Bay	89.20
62	Fort Ross	91.20

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Beluga Be
Bowhead Bh
Fulmer Fu
Sea Duck SD

Environmental Description

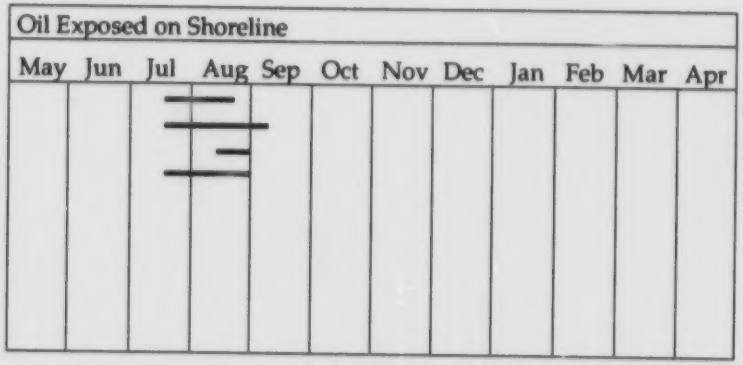
R 61, 62 Eighty-six archaeological sites have been identified within Areas 61 and 62.

Be 61, 62 From mid-July to mid-August, large numbers of belugas travel and forage along the southeast coast of Somerset Island (18).

Bh 61 Small numbers of bowheads have been observed along the coast near Cape Garry in recent years (18). Historically, this area was an important whaling ground (48).

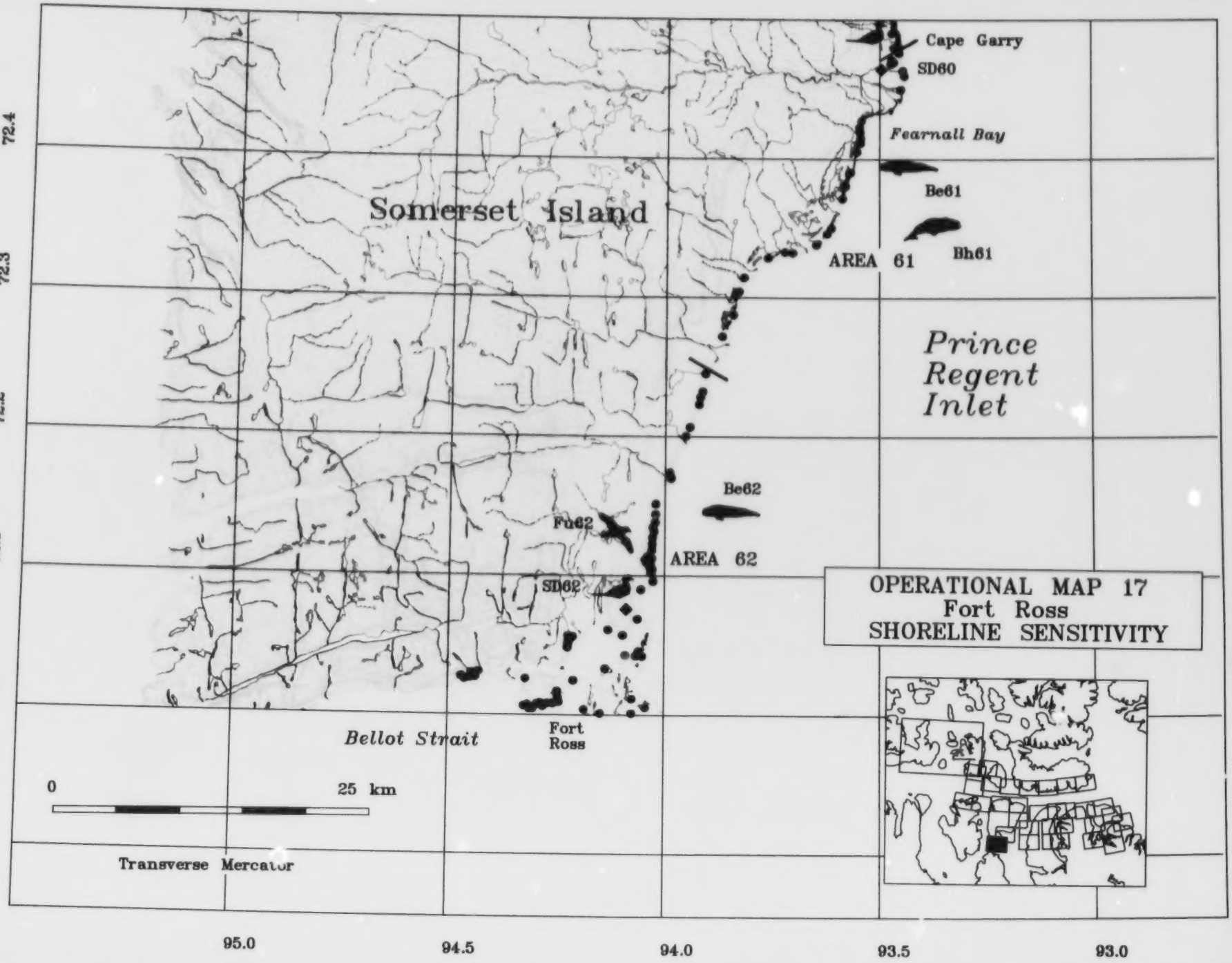
Fu 62 In late August of 1974 and 1975, many hundreds (25/km²) of fulmars were seen along this coast (1).

SD 60, 62 From mid-July to late August, thousands of eiders and hundreds of oldsquaws moult in the coastal waters of Creswell Bay and south to Bellot Strait (1).

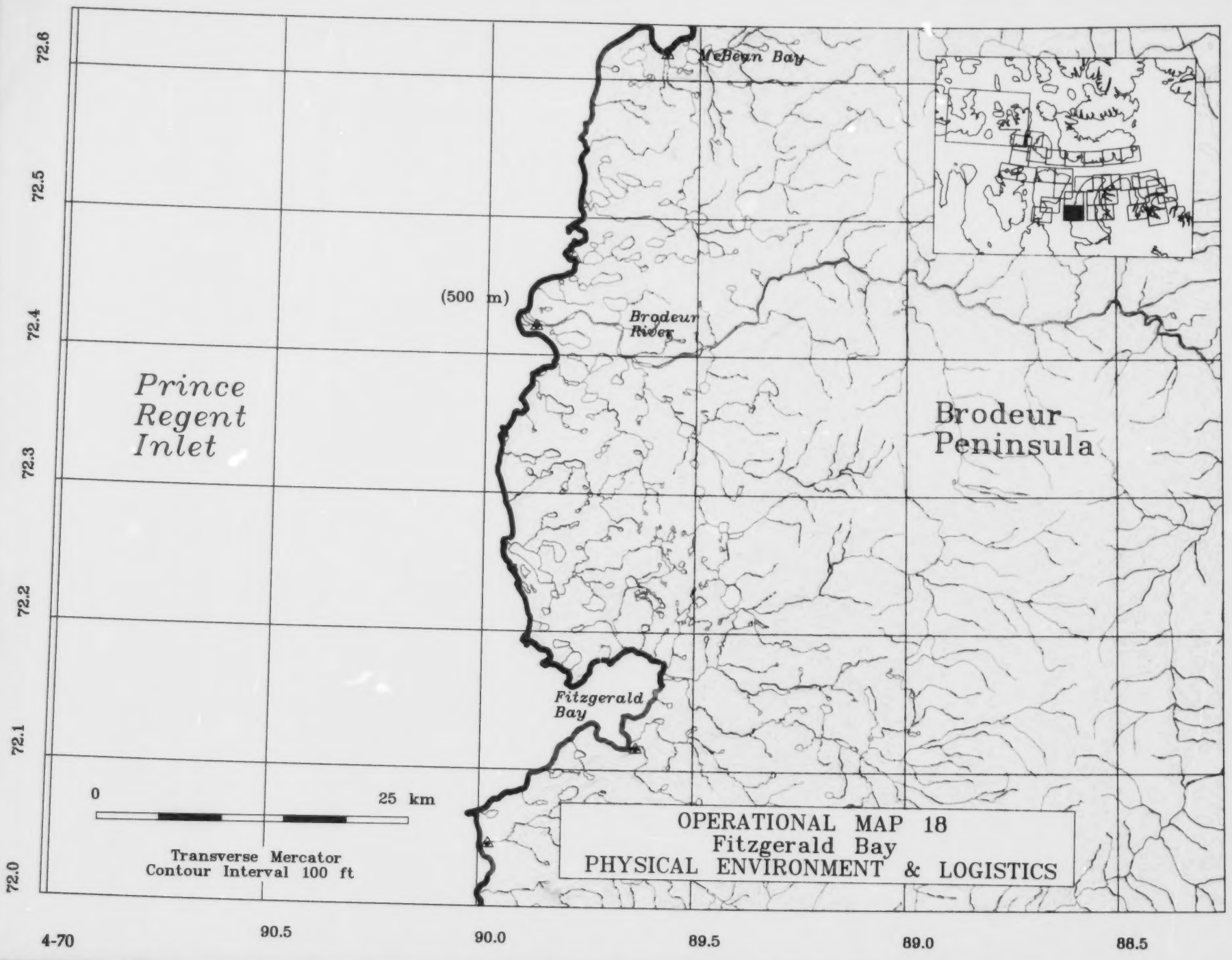


Occurrence of Species and Resource Use

Be 61, 62
Bh 61
Fu 62
SD 60, 62



OPERATIONAL MAP 17
Fort Ross
SHORELINE SENSITIVITY


72.6
72.5
72.4
72.3
72.2
72.1
72.0
McBean Bay
(500 m)
Brodeur River
Prince Regent Inlet
Brodeur Peninsula
Fitzgerald Bay
0
25 km
Transverse Mercator
Contour Interval 100 ft
OPERATIONAL MAP 18
Fitzgerald Bay
PHYSICAL ENVIRONMENT & LOGISTICS
4-70
90.5
90.0
89.5
89.0
88.5

Operational Map 18 - *Fitzgerald Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 17
Topographic Map - 58A
Hydrographic Chart - 7503
Video Tapes (reference number) - none

ACCESS:

The waters in this area, particularly nearshore, have not been extensively surveyed. Shoaling is indicated along much of the coast, particularly in the vicinity of river outfalls.

Depths are irregular in Fitzgerald Bay. Although deep water (53 m) is charted in the central portion, extensive shoaling at the entrance makes entry difficult except for shallow draft boats. Icebergs are reported to ground on shoal spits that extend from the southwest entrance to the bay.

Northward, the coast consists mainly of raised beaches backed by small ponds and lakes. Shoal water extends up to 3 km offshore.

Ice/overland access is reported from Arctic Bay (Map 25) in winter months.

COUNTERMEASURES:

All efforts should be made to prevent oil from entering Fitzgerald Bay and the Brodeur River outfall, both of which have poor access and may prove difficult to clean.
In-situ burning of oil in ice in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater. In open water conditions offshore and nearshore, containment for recovery or burning is recommended. Dispersant application seems justified in offshore and most nearshore areas, but is not advisable in the areas of Fitzgerald Bay and the Brodeur River estuary due to the presence of and possible impact on beluga concentrations. In these areas, approaching oil could be diverted onto less sensitive raised beach shorelines. As well, the entrance to the Brodeur River estuary (500 m) and other river outfalls in this area could be sealed using exclusion or diversion booming techniques depending on conditions.

The exposed raised beaches in this area may not require active cleaning efforts unless heavily contaminated. A temporary debris storage and incineration site may be possible on the coastal strip just north of the Brodeur River outfall but would require a site investigation to confirm its suitability.

SAFE HAVENS:

No appropriate safe havens could be identified in this map area. The closest candidate site is Port Bowen (Map 19) about 100 km north of the Brodeur River outfall.

Operational Map 18 - *Fitzgerald Bay*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
63	Fitzgerald Bay	75.60
64	Brodeur River	79.00
65	McBean Bay	78.50

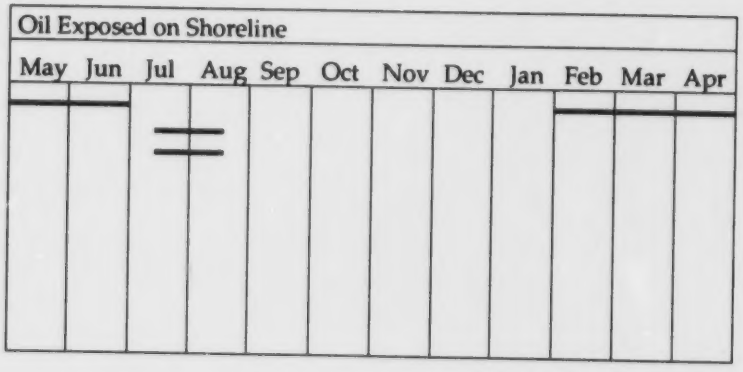
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Important R
- Beluga Be
- Beluga Habitat Be

Environmental Description

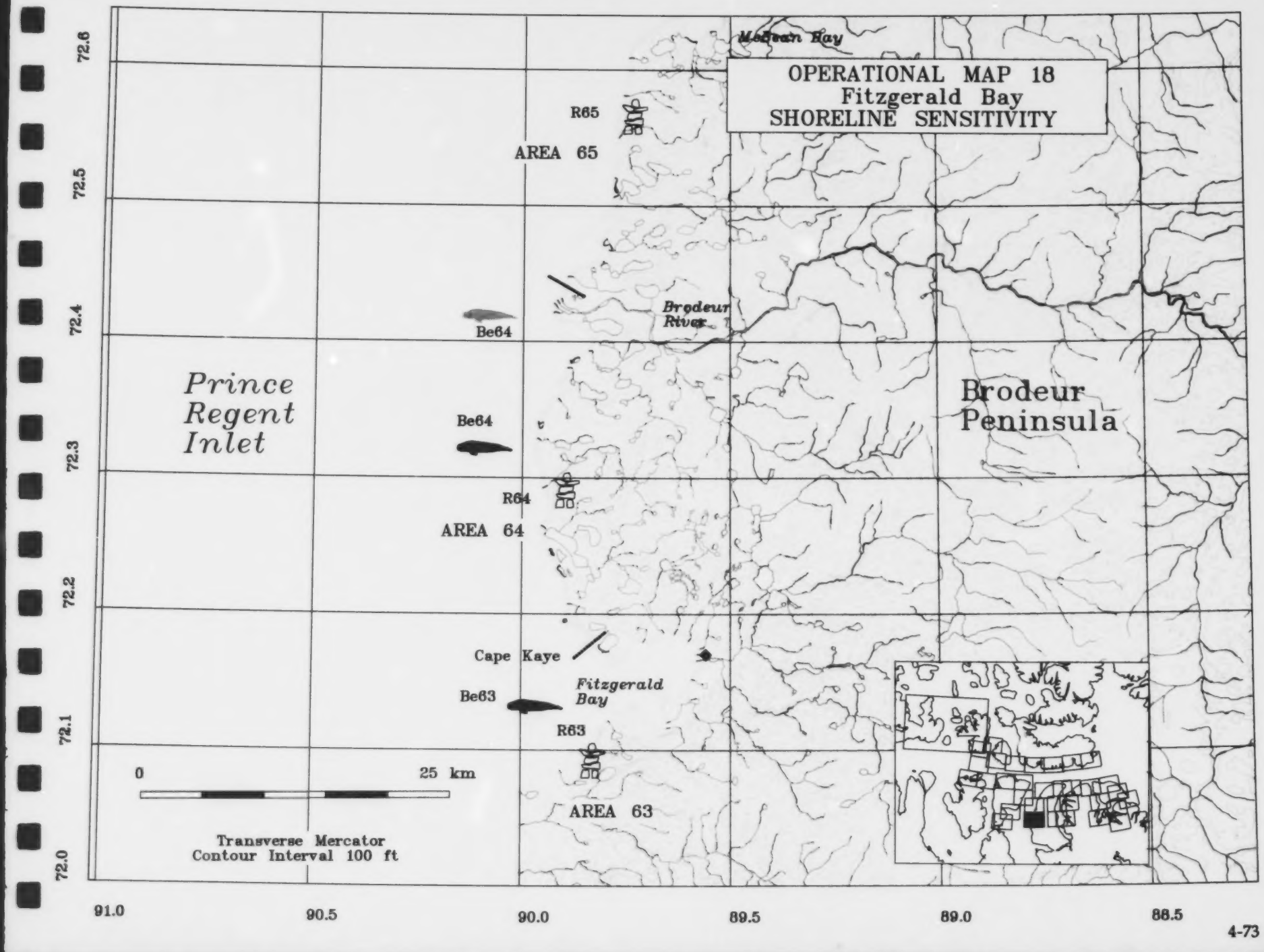
R 63 A traditional camp is located at the mouth of the river in Fitzgerald Bay but is not in use (14, 34, 56).
R 63-65 Arctic Bay residents use the area to hunt caribou during the winter and spring, although only small bands of caribou have been spotted up to McBean Bay. A trapline for Arctic fox is located along the shoreline of areas 63 through 65. However, this is used only during winter. Spring hunting for eider ducks and sport hunting for polar bear may occur in the spring and into May. In spring, polar bears are hunted at the floe edge at the mouth of the inlet (14).

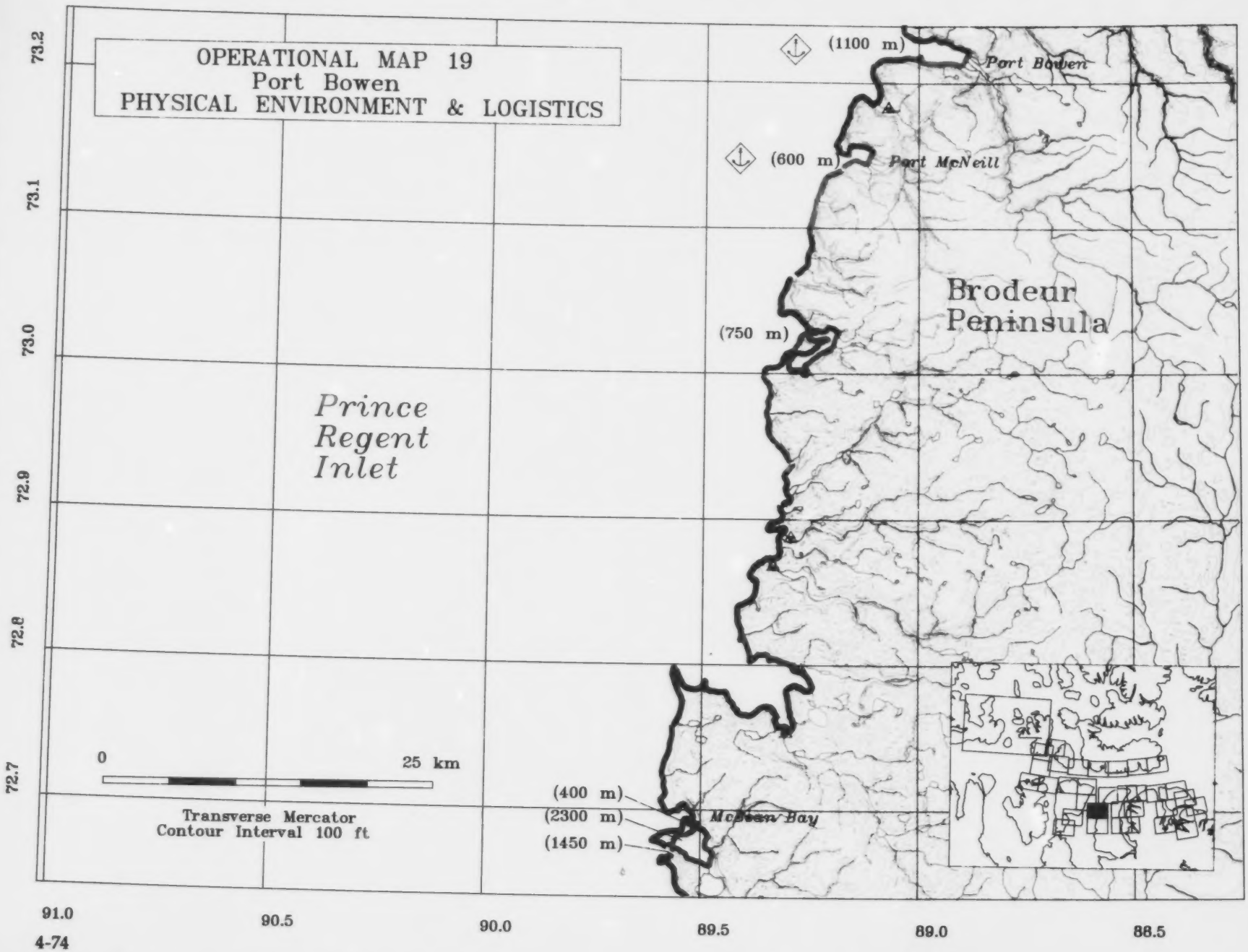
Be 63 Hundreds of belugas congregate from mid-July to mid-August in Fitzgerald Bay (33, 63).
Be 64 Hundreds of belugas gather in the Brodeur River estuary from mid-July to mid-August (33).



Occurrence of Species and Resource Use

R 63-65
Be 63
Be 64


OPERATIONAL MAP 18
Fitzgerald Bay
SHORELINE SENSITIVITY
Melman Bay
R65
AREA 65
Brodeur River
Be64
Prince Regent Inlet
Be64
Brodeur Peninsula
R64
AREA 64
Cape Kaye
Fitzgerald Bay
Be63
R63
AREA 63
0
25 km
Transverse Mercator
Contour Interval 100 ft
72.6
72.5
72.4
72.3
72.2
72.1
72.0
91.0
90.5
90.0
89.5
89.0
88.5
4-73


OPERATIONAL MAP 19
Port Bowen
PHYSICAL ENVIRONMENT & LOGISTICS
(1100 m)
Port Bowen
(600 m)
Port McNeill
Brodeur
Peninsula
(750 m)
Prince
Regent
Inlet
0
25 km
Transverse Mercator
Contour Interval 100 ft
(400 m)
(2300 m)
(1450 m)
McBean Bay
73.2
73.1
73.0
72.9
72.8
72.7
91.0
90.5
90.0
89.5
89.0
88.5

Operational Map 19 - *Port Bowen*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 17
Topographic Map - 58A, 58D
Hydrographic Chart - 7503, 7568, 7569, 7851
Video Tapes (reference number) - none

ACCESS:

The waters in this area, particularly nearshore and embayments, have not been extensively surveyed. Shoaling is not generally indicated along the coast but may occur in the vicinity of river outfalls. Currents are northward along the coast and in the 50 cm/s range.

McBean Bay is uncharted, but appears to be shallow. The large inlet 15 km north of McBean Bay is uncharted and entered with difficulty due to shoaling that almost spans its entrance. Small vessel access may be possible in each case.

Port Neill has a well-sheltered anchorage with very good holding in 37 m (mud). It is uncharted and has shoaling at its entrance where depths of 18 to 25 m are reported. Further north, Port Bowen offers limited but well-sheltered anchorage in 7.3 to 9.1 m. The reported tidal range is 1.5 to 1.9 m.

COUNTERMEASURES:

In-situ burning of oil in conjunction with tracking oiled ice in ice concentrations of 6 tenths or greater is recommended. In open water conditions offshore and nearshore, containment for recovery or burning is recommended. Dispersant application seems justified in offshore and nearshore waters to reduce shoreline impacts. Although the embayments in this area are not identified as important marine habitats, expert advice should be sought prior to dispersant use in inshore waters to determine impact potential.

In order to limit inshore contamination and subsequent cleanup requirements, several inlets should be considered for exclusion booming. These include entrances to and inlets in McBean Bay (1450 m, 2300 m, 400 m), the inlet 10 km south of Port Neill (750 m), Port Neill (600 m), and Port Bowen (1100 m), as well as the several river outfalls along the coast. Alternatively, depending on prevailing conditions, approaching oil could be diverted to adjacent less sensitive talus and raised beach shorelines.

Raised beach and talus shorelines in this area, which are highly exposed to prevailing seas, may not require active cleaning efforts unless heavily contaminated. Poor marine access to barrier beaches and river deltas may dictate either cleanup during late winter/spring when access can be gained via ice and/or land or a helicopter-supported operation. Temporary storage of collected oily material and/or its incineration may be possible near the entrances to the two unnamed bays 15 and 40 km north of McBean Bay, although further inspection would be required to confirm suitability.

SAFE HAVENS:

Potential areas for vessel lightering and/or stabilization operations are Port Neill and Port Bowen. In each case, the anchorage offers both protection from the elements as well as an excellent opportunity to contain the spread of any further oil release. As both bays are uncharted, a depth survey should be taken if their use is considered.

Operational Map 19 - *Port Bowen*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
65	McBean Bay	78.50
66	Western Brodeur Peninsula	75.40
67	Port Bowen	59.50

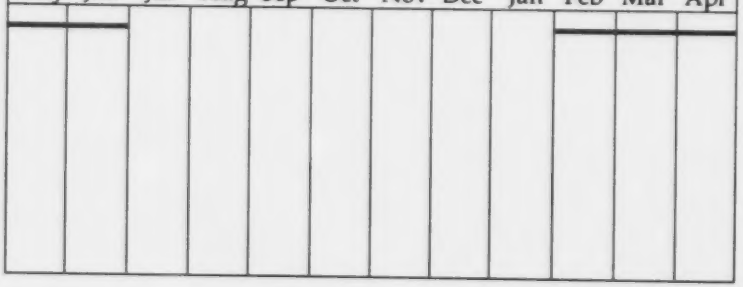
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Important R

Environmental Description

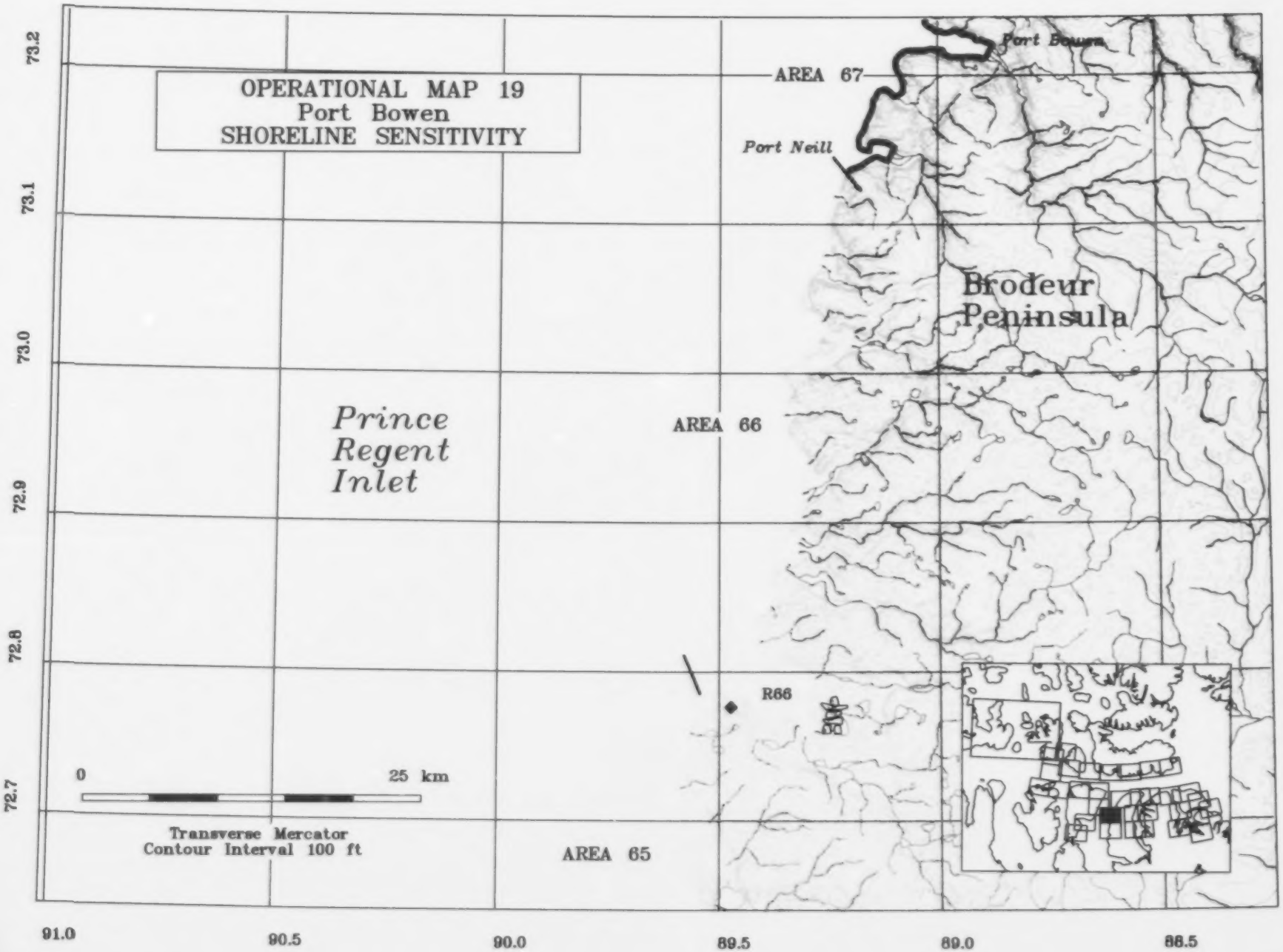
R 66 Arctic Bay residents use the area to hunt caribou during the winter and spring, although only small bands of caribou have been spotted up to McBean Bay. In spring, polar bears are hunted at the floe edge at the mouth of the inlet (14).

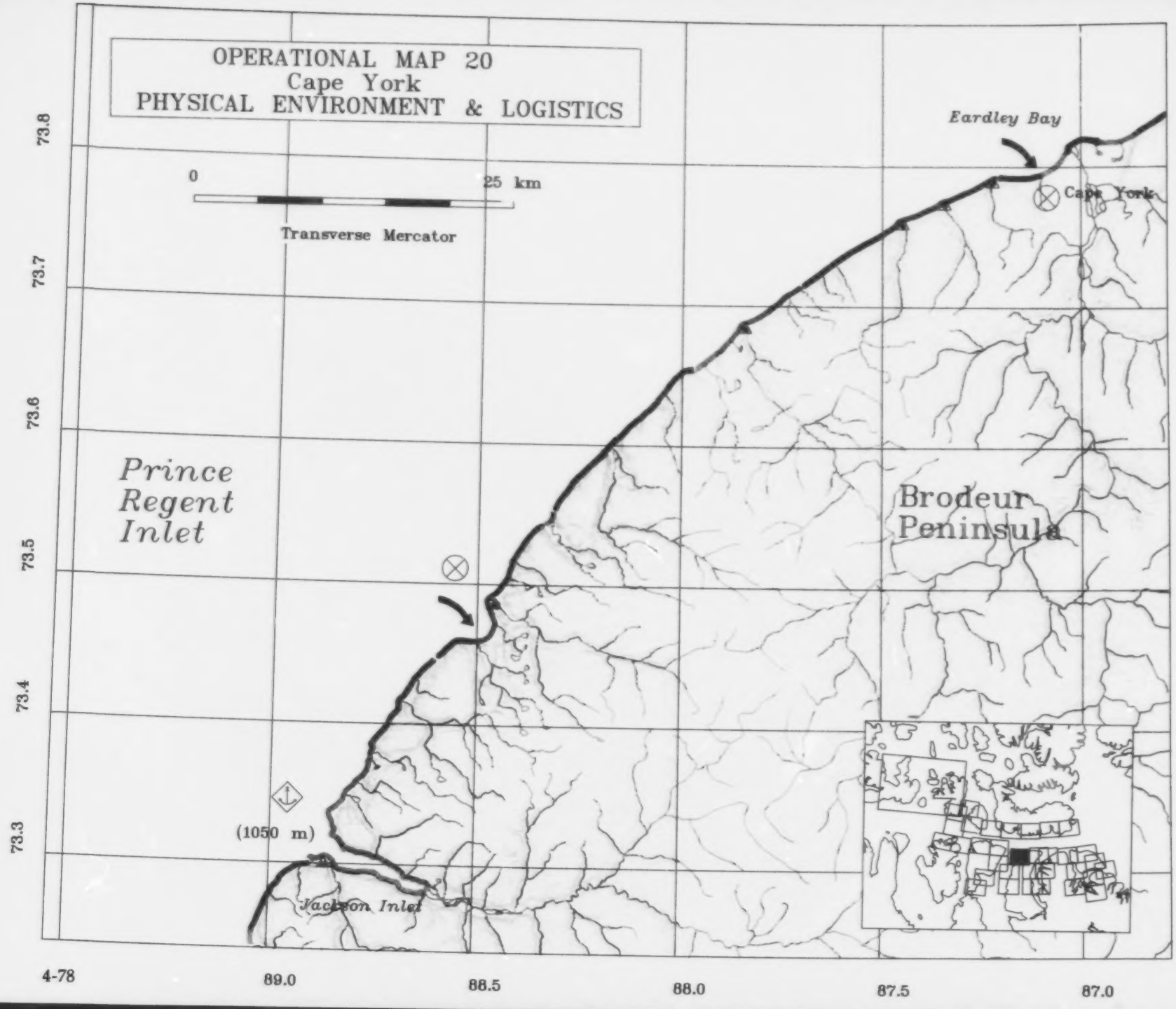
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

R 66


OPERATIONAL MAP 19
Port Bowen
SHORELINE SENSITIVITY
AREA 67
Port Bowen
Port Neill
Brodeur
Peninsula
Prince
Regent
Inlet
AREA 66
R66
0
25 km
Transverse Mercator
Contour Interval 100 ft
AREA 65
73.2
73.1
73.0
72.9
72.8
72.7
91.0
90.5
90.0
89.5
89.0
88.5


OPERATIONAL MAP 20
Cape York
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Eardley Bay
Cape York
Prince
Regent
Inlet
Brodeur
Peninsula
(1050 m)
Jackson Inlet
73.8
73.7
73.6
73.5
73.4
73.3
89.0
88.5
88.0
87.5
87.0

Operational Map 20 - *Cape York*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 26
Topographic Map - 48C, 58D
Hydrographic Chart - 7503, 7568, 7569
Video Tapes (reference number) - none

ACCESS:

Although the nearshore waters in this area are largely uncharted, deep water appears to be close to shore with the 200 m contour 2 to 5 km offshore. Currents set to the northeast along the coast and are in the 25 cm/s range. The vast majority of the coast is cliff, talus or raised beach shoreline, all of which is highly exposed, broken only by narrow river valleys.

Jackson Inlet, although uncharted, appears to have deep water and offer good shelter. About 20 km northeast of the inlet there is beach that may allow shore access. Shore access and beach operations may also be possible at Eardley Bay.

Access over ice may be possible from Arctic Bay during the late winter/spring.

COUNTERMEASURES:

In ice concentrations of 6 tenths or greater, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions offshore and nearshore, containment for recovery or burning is recommended. However, containment may be difficult due to sea conditions in this highly exposed area, as well as due to the presence of drifting ice floes. Dispersant application may be justified in offshore and nearshore waters to reduce shoreline oiling.

The cliff, talus, and raised beach shorelines that predominate this area, and which are highly exposed to prevailing seas, may not require active cleaning efforts if not heavily contaminated. A site for the temporary stockpiling and/or incineration of oily debris may be possible on the beach at the south entrance to Jackson Inlet, at the beach located 20 km northeast of Jackson Inlet, and at Eardley Bay. Each of these sites would require closer inspection to confirm their suitability.

SAFE HAVENS:

Jackson Inlet, although uncharted, appears to be a good candidate for a safe haven for vessel lightering and/or stabilization operations. The steep sides and narrow inlet (1050 m) would offer good protection from the elements and an excellent opportunity to contain the spread of any further oil release. A depth survey should be carried out if it is to be considered. If unsuitable, an alternative would be Port Bowen (Map 19) about 12 km southwest of Jackson Inlet.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 20 - *Cape York*

Environmental Description

R 68 Arctic Bay residents hunt ringed and bearded seals on the sea ice and at ice cracks through much of Admiralty Inlet and southern Lancaster Sound during spring and at the floe edge during July and August. Although much of this hunting occurs in the offshore, some hunting is likely to occur in the nearshore as well.

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
67	Port Bowen	59.50
68	Northwest Brodeur Peninsula	68.80
69	Cape York	80.90

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

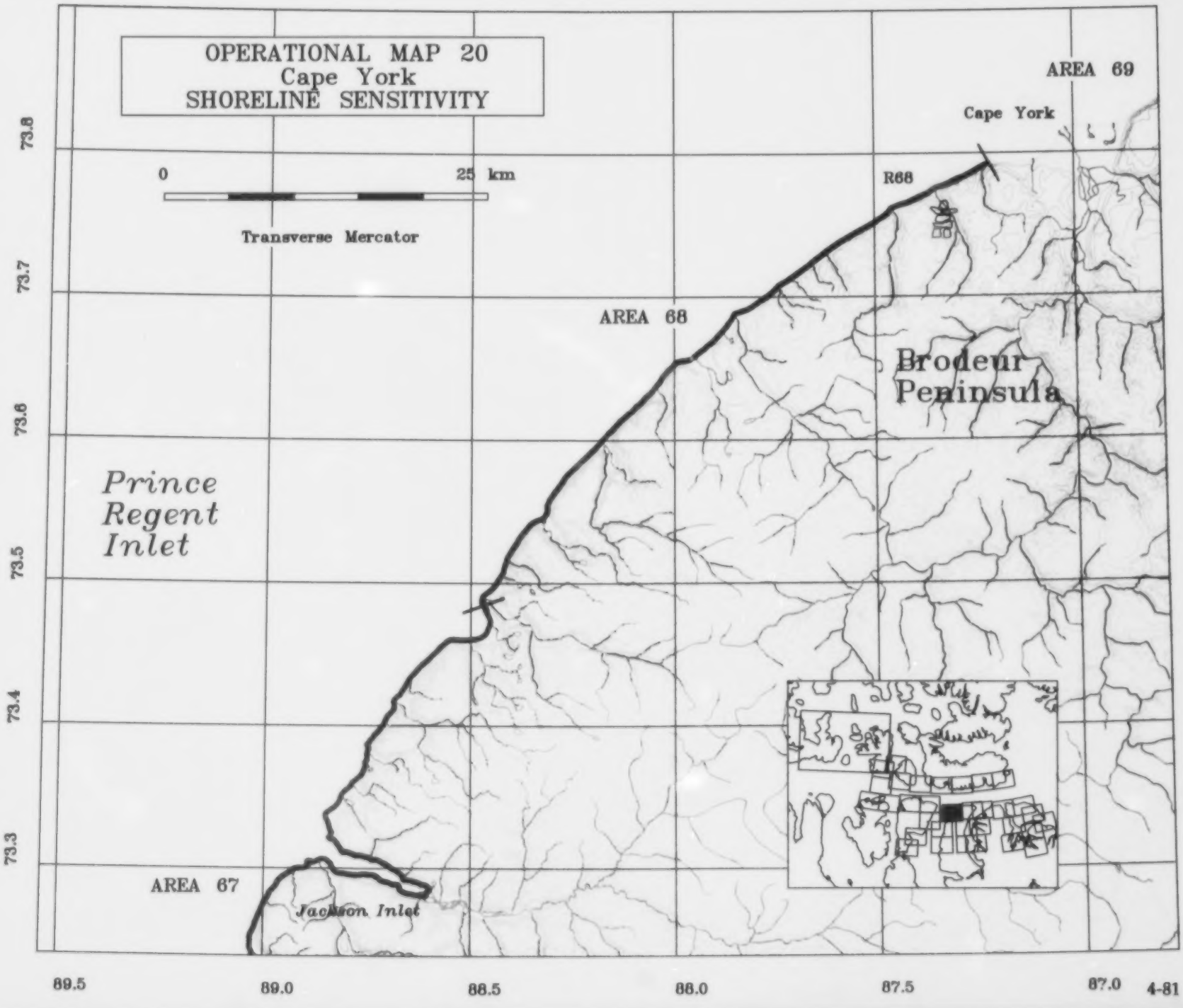
Important R

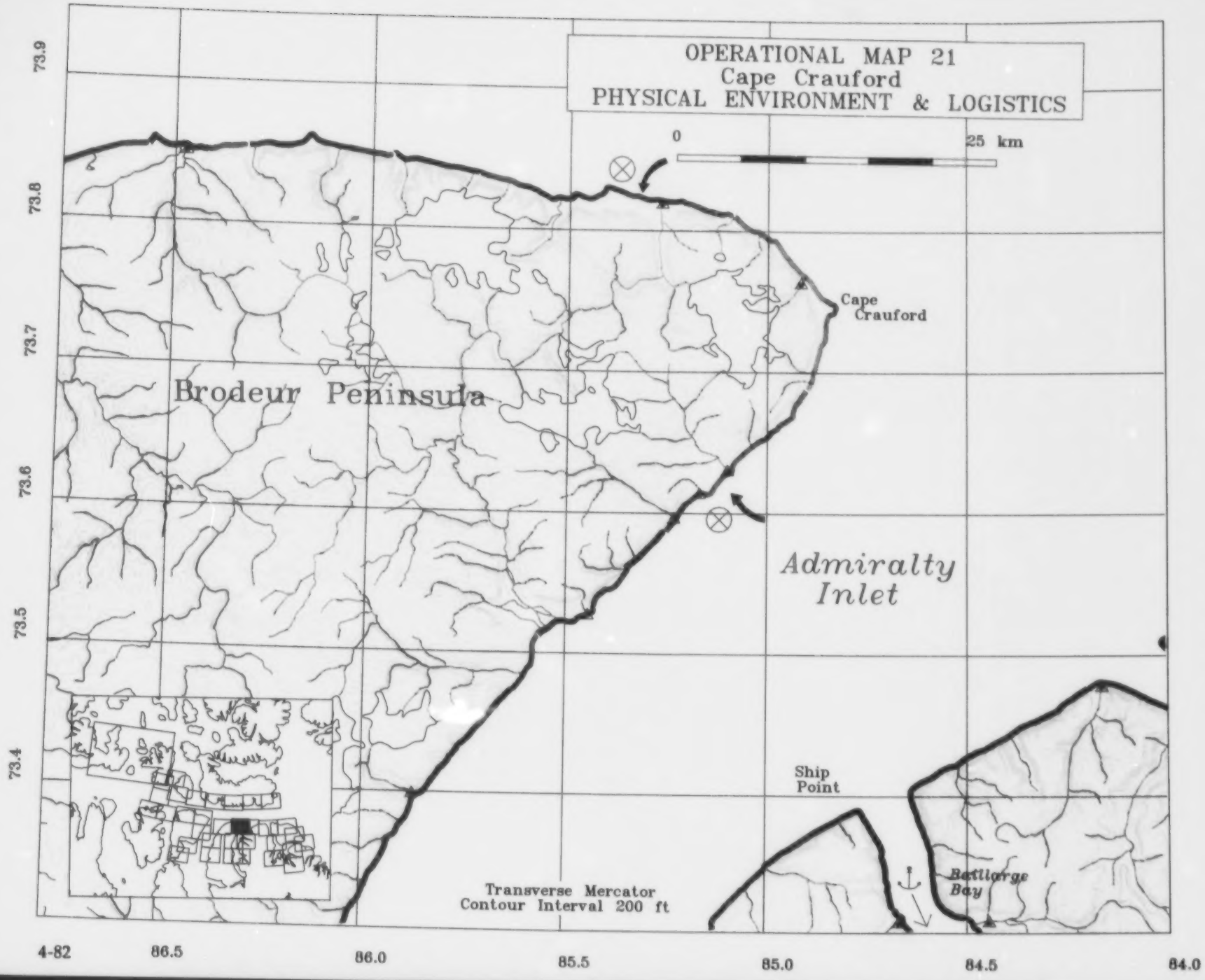
Oil Exposed on Shoreline

May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr

Occurrence of Species and Resource Use

R 68


OPERATIONAL MAP 20
Cape York
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
AREA 69
Cape York
R68
AREA 68
Brodeur
Peninsula
Prince
Regent
Inlet
AREA 67
Jackson Inlet
73.8
73.7
73.6
73.5
73.4
73.3
89.5
89.0
88.5
88.0
87.5
87.0
4-81


OPERATIONAL MAP 21
Cape Crauford
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Cape Crauford
Brodeur Peninsula
Admiralty Inlet
Ship Point
Bellarge Bay
Transverse Mercator
Contour Interval 200 ft
73.9
73.8
73.7
73.6
73.5
73.4
4-82
86.5
86.0
85.5
85.0
84.5
84.0

Operational Map 21 - *Cape Crauford*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 26
Topographic Map - 48C
Hydrographic Chart - 7220, 7503, 7568
Video Tapes (reference number) - none

ACCESS

Along the north coast of the Brodeur Peninsula, deep water exists close to shore except at the several river outfalls and near Cape Crauford where shoaling occurs up to 2 km offshore. The average surface current is about 25 cm/s eastward along the coast.

Off Cape Crauford, the tidal stream attains a rate of about 75 cm/s. Marine access and shore operations may be possible on the narrow coastal strip adjacent to the cape.

The coastline south of Cape Crauford is mainly cliff cut by numerous river valleys. Sites for marine access and shore operations are severely limited along this coastline, but may be possible on the coastal plain about 20 km southwest of Cape Crauford.

During winter and spring months, access over ice and/or land to this area is reported from Arctic Bay (Map 25) .

The shoreline in the southeast corner of this map area (Borden Peninsula) is described in Operational Map 26.

COUNTERMEASURES

In offshore and nearshore waters in ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended. Containment operations nearshore may be complicated by high current velocities, particularly in the vicinity of Cape Crauford. Dispersant application may be justified in offshore and nearshore waters in order to limit the extent of inshore contamination.

There are no embayments in this map area that would require exclusion booming. However, consideration should be given to protecting coastal plain areas and river outfalls by diversion booming, directing approaching oil to neighbouring talus and raised beach shorelines.

The majority of shoreline in this area is highly exposed, and on the southeast coast of the Brodeur Peninsula is almost exclusively cliff shoreline. In each case, active cleaning efforts may not be required if not heavily oiled. Beach access and land-based debris storage and incineration may be possible on the coastal strip near Cape Crauford and on the coastal plain about 20 km southwest of the cape.

SAFE HAVENS

No potential safe havens were identified in this map area. The closest candidate site is Baillarge Bay (Map 25), entered approximately 40 km south of Cape Crauford.

Operational Map 21 - *Cape Crauford*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
69	Cape York	80.90
70	Stanley Point	83.90
71	Cape Crauford	91.90
72	Eastern Brodeur Peninsula	75.90
80	Strathcona Sound	103.40
81	Elwin Inlet	101.80

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Important R
- Narwhal Na
- Fulmer Fu
- Sea Duck SD
- Fulmer Colony Fu

Environmental Description

R 69-72 Arctic Bay residents hunt ringed and bearded seals on the sea ice and at ice cracks through much of Admiralty Inlet and southern Lancaster Sound during spring and at the floe edge during July and August. Although much of this hunting occurs in the offshore, some hunting likely occurs in the nearshore as well. Concentrated hunting in the shore leads during June and July occurs primarily along the Borden Peninsula. Harp and bearded seals are also taken in this area during the summer open water period. Polar bears are hunted on the sea ice of Admiralty Inlet, Strathcona and Adams Sounds during winter and spring. Hunter harvest is concentrated along the Brodeur coast opposite Adams and Strathcona Sounds (32). Narwhals are hunted from boats during August, primarily on the west side of Admiralty Inlet from the Kakiak Point camp (22). A small number of walrus are taken at the floe edge off Cape Crauford in spring in some years (14, 22). During the spring and late spring, the Cape Crauford area is used as a staging point for tourist floe edge trips (56).

R 71, 72 Seasonal hunting camps are located south of Cape Crauford in Area 71 and below the Turner Cliffs adjacent to Adams Sound. During summer, Arctic Bay residents hunt duck and geese along the Brodeur Peninsula coastline. Domestic fishing for Arctic char occurs along the Brodeur coast adjacent to Adams Inlet (14).

R 81 From April to July, Arctic Bay residents hunt seals at their breathing holes on sea ice in Baillarge Bay (43). Seals are also hunted in August. However, harvests are not particularly concentrated in this area (22). Traditional, seasonal camps are located between the south headland of Elwin Inlet and Baillarge Bay (56). Ice cracking occurs off headlands in Admiralty Inlet with some predictability, with cracks occurring in the winter ice and opening up in the late spring. These cracks are used by Arctic Bay hunters to hunt seals and narwhal. The narwal hunt occurs in July for a short period after the cracks open up. The headland of Elwin Bay is a very significant marine mammal hunting area for Arctic Bay hunters due to the position of the ice edge in the spring.

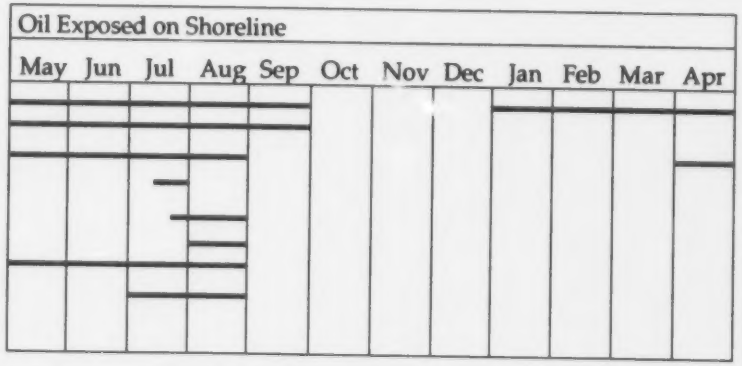
Na 71, 72, 81 From mid- to late July, a large proportion of the Lancaster Sound narwhal population move into Admiralty Inlet through shore leads and ice cracks (15, 17, 28).

Fu 71 From late July to late August, thousands of fulmars feed offshore near Cape Crauford (37).

Fu 80 From late July to late August, thousands of fulmars feed in large flocks along the coast north of Cape Strathcona and in Strathcona Sound (37).

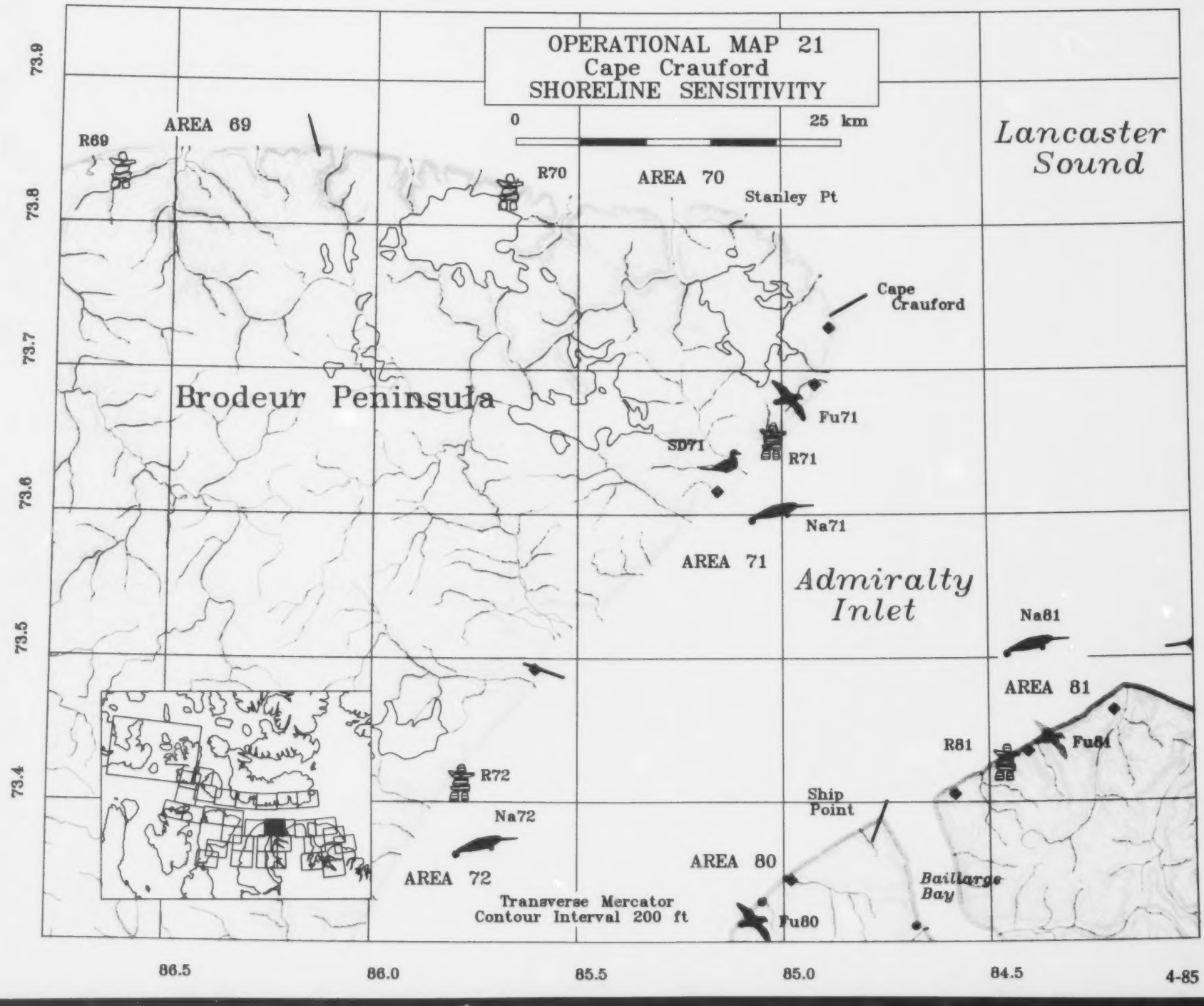
Fu 81 A large colony of fulmars (25,000 pairs) nests along a 12 km section of cliff between Baillarge Bay and Elwin Inlet (7).

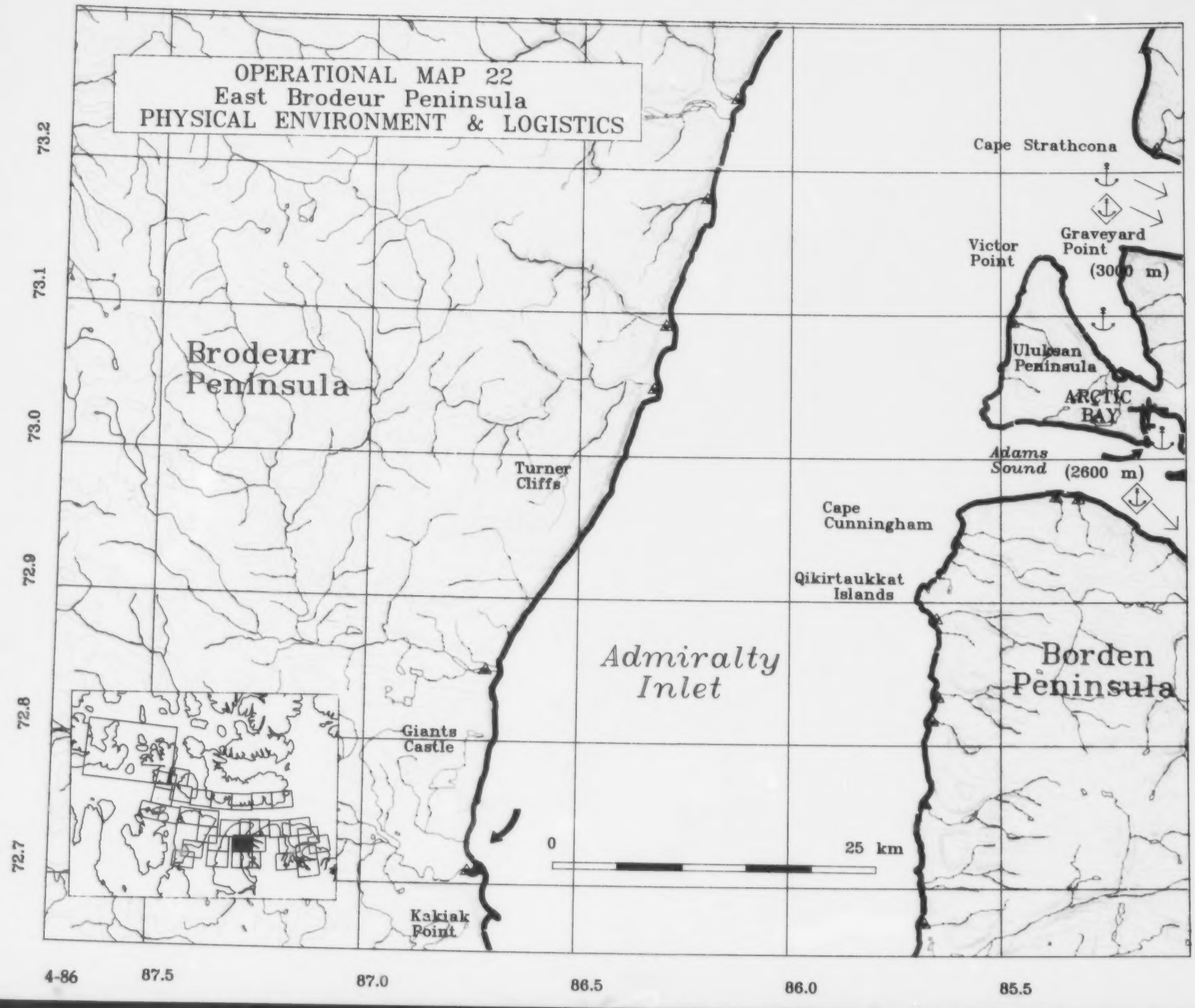
SD 71 During July and August, thousands of eiders occur along this coast south of Cape Crauford (37).



Occurrence of Species and Resource Use

- R 69-72
- R 71, 72
- R 81
- Na 71, 72, 81
- Fu 71
- Fu 80
- Fu 81
- SD 71


OPERATIONAL MAP 21
Cape Crauford
SHORELINE SENSITIVITY
0
25 km
AREA 69
R69
R70
AREA 70
Stanley Pt
Lancaster Sound
Cape Crauford
Brodeur Peninsula
Fu71
SD71
R71
Na71
AREA 71
Admiralty Inlet
Na81
AREA 81
R81
Fu81
R72
Ship Point
Na72
AREA 72
AREA 80
Baillarge Bay
Fu80
Transverse Mercator
Contour Interval 200 ft
73.9
73.8
73.7
73.6
73.5
73.4
86.5
86.0
85.5
85.0
84.5
4-85


OPERATIONAL MAP 22
East Brodeur Peninsula
PHYSICAL ENVIRONMENT & LOGISTICS
Cape Strathcona
Graveyard Point
(3000 m)
Victor Point
Brodeur Peninsula
Ulukşan Peninsula
ARCTIC BAY
Adams Sound
(2600 m)
Turner Cliffs
Cape Cunningham
Qikirtaukkat Islands
Admiralty Inlet
Borden Peninsula
Giants Castle
Kakiak Point
0
25 km
73.2
73.1
73.0
72.9
72.8
72.7
4-86
87.5
87.0
86.5
86.0
85.5

Operational Map 22 - *East Brodeur Peninsula*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 25
Topographic Map - 48B, 48C
Hydrographic Chart - 7220, 7503, 7512, 7568
Video Tapes (reference number) - none

ACCESS

The shoreline on the west side of Admiralty Inlet is almost exclusively cliff except where broken by river valleys. Beach access and shore operations may be possible along the coastal strip just north of Kakiak Point. The waters along this shoreline are largely uncharted, with no depths charted within 10 to 20 km of the coast. Although deep water is likely to exist quite close to shore, shoaling is possible particularly near river outfalls. Water currents in this area are generally weak with only a slight tidal influence.

The shoreline on the east side of Admiralty Inlet is described in detail in Operational Map 25. Of significance in that area is the presence of an airfield, wharf, mine site, hamlet and good anchorages that make Arctic Bay/ Nanisivik an ideal staging site for spill response in this area.

Travel over ice in the area should be possible from November to June/July.

COUNTERMEASURES

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application to protect waterfowl should be considered in the offshore and nearshore waters, but is cautioned against in shallow waters in this area due to the lack of knowledge of the effects of dispersed oil on narwhals. A similar caution applies to the Vista River area due to its importance as a feeding habitat for char.

The west side of Admiralty Inlet, being almost exclusively cliff shoreline with no inlets, poses few requirements for shoreline protection. In order to limit the contamination of coastal plains at river outfalls, consideration could be given to directing approaching oil to neighbouring cliff and talus shores.

The exposed high relief shores in this area may not require active cleaning efforts if not heavily oiled. The coastal strip just north of Kakiak Point could be considered as a temporary storage site for collected oily material and/or for its incineration, although closer inspection would be required to confirm its suitability. Alternatively, collected material could be transported across Admiralty Inlet during winter to sites in the Nanisivik area (Map 25).

SAFE HAVENS

There are no potential safe havens along the west side of Admiralty Inlet; candidate sites have been identified at Nanisivik wharf, Strathcona Sound, Baillarge Bay, and Adams Sound all of which are shown on Map 25.

Operational Map 22 - *East Brodeur Peninsula*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
72	Eastern Brodeur Peninsula	75.90
73	Turner Cliffs	94.40
74	Kakiak Point	98.20
77	Levasseur Inlet	98.50
78	Arctic Bay	116.40
79	Victor Point	80.50
80	Strathcona Sound	103.40

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Char Ch
- Highly Important R
- Narwhal Na
- Bowhead Bh

Environmental Description

R 73 Seasonal hunting camps are located below the Turner Cliffs adjacent to Adams Sound. During summer, Arctic Bay residents hunt duck and geese along the Brodeur Peninsula coastline. Domestic fishing for Arctic char occurs along the Brodeur coast adjacent to Adams Inlet (14).

R 77 Numerous seasonal, traditional camps have been established south of Cape Cunningham to Stephens Headland. Domestic fishing occurs at the mouth of the Eqalulik River in Levasseur Inlet and north of Qikirtaukkat Islands. Ducks and geese are also hunted in the Cape Cunningham and Levasseur Inlet area, and seals are hunted year-round (14).

R 77, 78, 80 A number of archaeological sites are found along this stretch of coastline. Area 80 lies within the proposed North Baffin/Lancaster Sound National Park (16).

R 78 The community of Arctic Bay is located on Adams Bay. Numerous seasonal and traditional camps have been established in Adams Sound and south of Cape Cunningham to Stephens Headland. Domestic fishing occurs at the mouth of the Eqalulik River in Levasseur Inlet and north of Qikirtaukkat Islands. Ducks and geese are also hunted in the Cape Cunningham and Levasseur Inlet area, and seals are hunted year-round (14).

R 79 Seasonal camps are located at Victor Point and south of Victor Point on the Uluksan Peninsula. Arctic Bay residents hunt geese and ducks off Victor Point during the spring and open water season, narwhal in Victor Bay in August and September, and ringed seals near and offshore year-round. Domestic fishing by Arctic Bay residents occurs south of Graveyard Point and adjacent to the Uluksan Peninsula in Victor Bay.

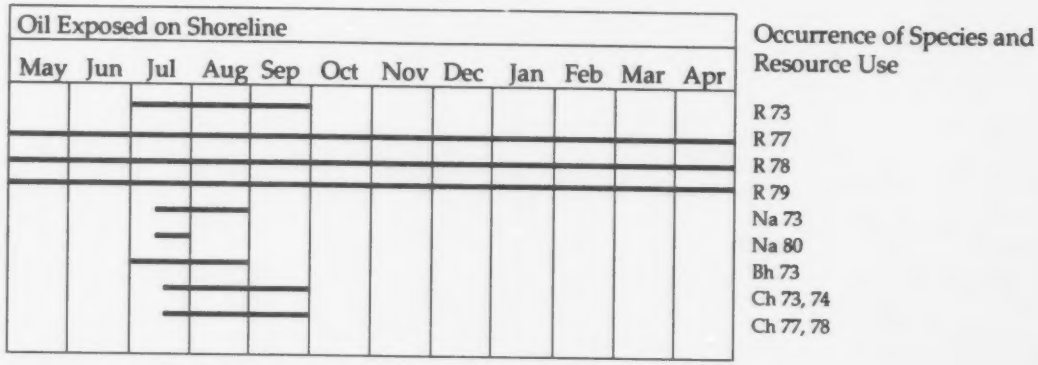
Na 73 During mid- to late July, a large proportion of the Lancaster Sound narwhal population move into Admiralty Inlet through shore leads along the Brodeur Peninsula (15, 17). A large proportion of the Lancaster Sound narwhal population summers in southern Admiralty Inlet and are often seen moving back and forth along the coast of Brodeur Peninsula (17, 15, 32).

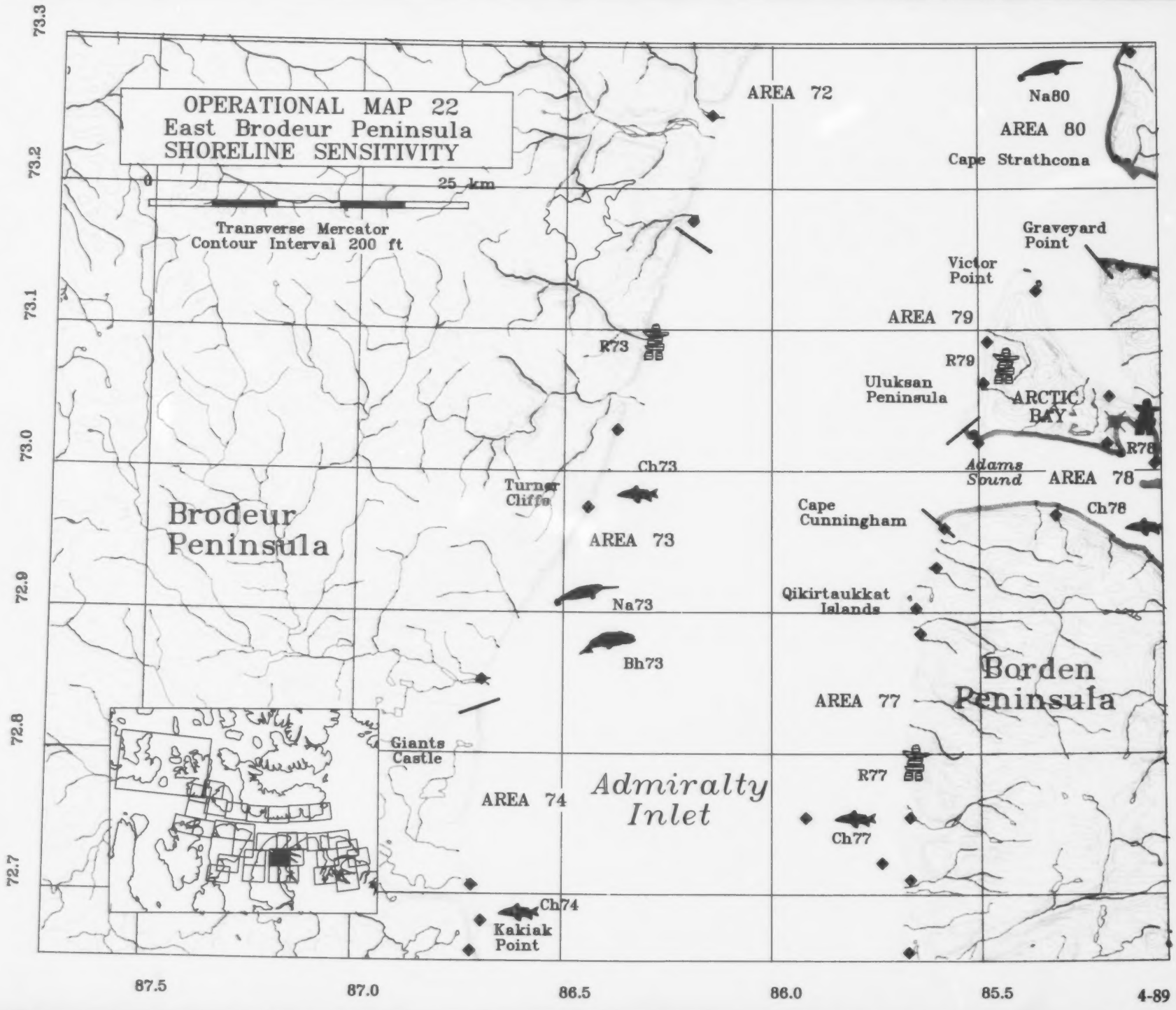
Na 80 During mid- to late July, large numbers of narwhals move into Admiralty Inlet through shore leads along the Borden Peninsula (28, 29, 35).

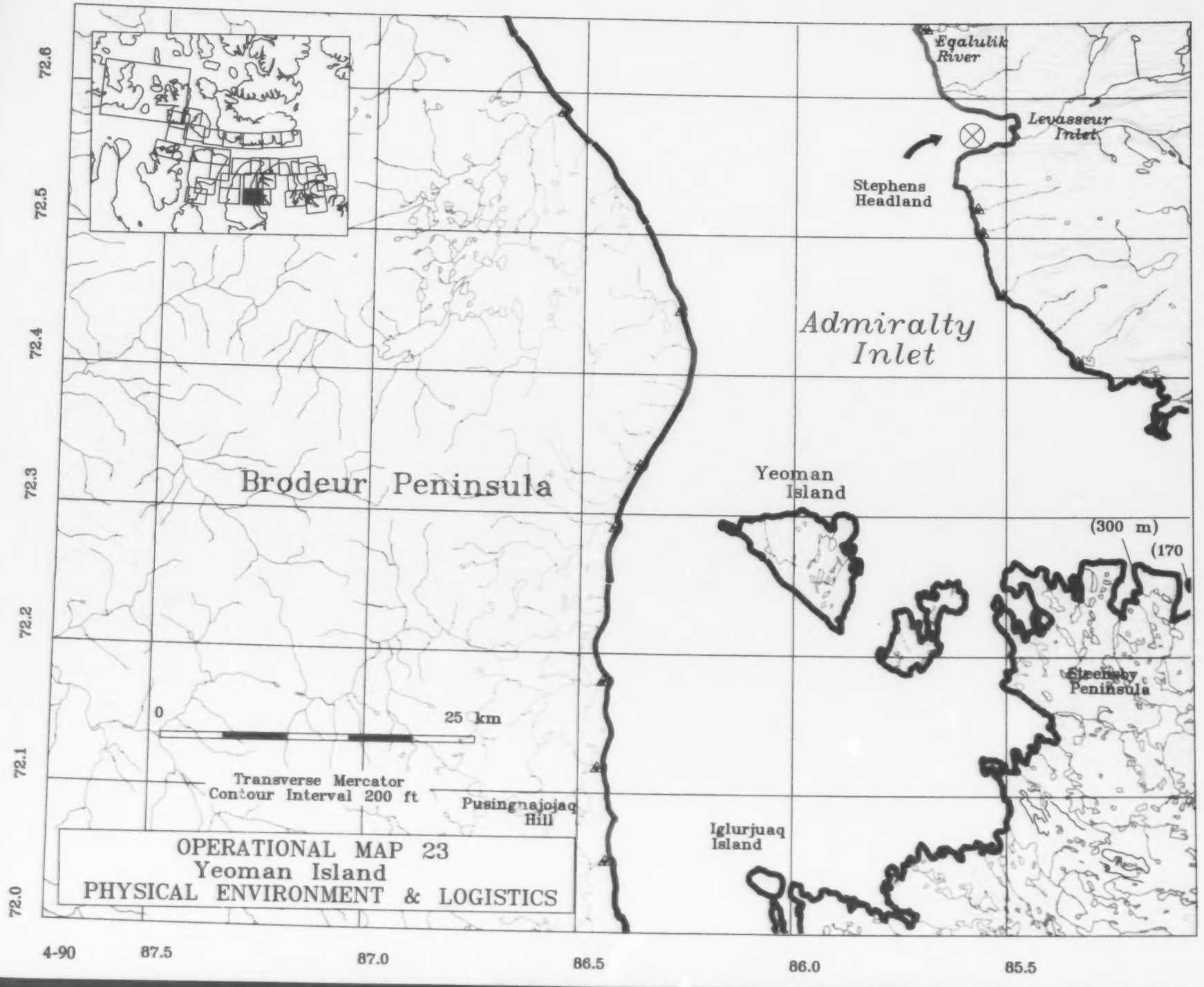
Bh 73 During July and August, a significant number of bowheads are found in southern Admiralty Inlet and are sometimes observed moving back and forth along the coast of Brodeur Peninsula (15, 17, 41).

Ch 73, 74 During the open water season, the Vista River area provides an important summer feeding habitat for anadromous Arctic char.

Ch 77, 78 Anadromous Arctic char are known to occur in the vicinity of Eqalulik River and Arctic Bay during summer feeding and migration (42, 67, 74).




OPERATIONAL MAP 22
East Brodeur Peninsula
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 200 ft
AREA 72
Na80
AREA 80
Cape Strathcona
Graveyard Point
Victor Point
AREA 79
R73
R79
Uluksan Peninsula
ARCTIC BAY
R78
Adams Sound
AREA 78
Ch73
Turner Cliffs
Brodeur Peninsula
AREA 73
Cape Cunningham
Ch78
Na73
Qikirtaukkat Islands
Bh73
Borden Peninsula
AREA 77
Giants Castle
AREA 74
Admiralty Inlet
R77
Ch77
Ch74
Kakiak Point
73.3
73.2
73.1
73.0
72.9
72.8
72.7
87.5
87.0
86.5
86.0
85.5
4-89


Eqalulik River
Levasseur Inlet
Stephens Headland
Admiralty Inlet
Brodeur Peninsula
Yeoman Island
(300 m)
(170
Steensby Peninsula
0
25 km
Transverse Mercator
Contour Interval 200 ft
Pusingnajojaq Hill
Iglurjuaq Island
OPERATIONAL MAP 23
Yeoman Island
PHYSICAL ENVIRONMENT & LOGISTICS
72.6
72.5
72.4
72.3
72.2
72.1
72.0
4-90
87.5
87.0
86.5
86.0
85.5

Operational Map 23 - *Yeoman Island*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 25
Topographic Map - 48B
Hydrographic Chart - 7220, 7503, 7568
Video Tapes (reference number) - none

ACCESS

The waters in this area are largely uncharted: Only a single line of depth soundings are charted, indicating mid-channel depths of 400 m or more decreasing to about 40 m near Yeoman Island. Several islets and shoal hazards are noted in the vicinity of Yeoman Island.

Travel over ice in this area should be possible from November to June/July.

COUNTERMEASURES

All efforts should be made to prevent oil from reaching the shorelines in the southern portion of this map area: Their more intricate nature will greatly increase subsequent cleanup requirements and the numerous islets and shoal hazards will make marine access difficult.

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended. Dispersant application could be considered in offshore and nearshore areas, but is cautioned against in shallow waters in this area due to the lack of knowledge of the effects of dispersed oil on narwhals.

North of Yeoman Island, the shorelines on both sides of Admiralty Inlet offer few opportunities for shoreline protection techniques. In order to limit contamination of coastal plains and river outfalls, consideration could be given to directing approaching oil to neighbouring cliff and raised beach shores. Oil approaching the Steensby Peninsula (southeast of Yeoman Island) should be contained on or directed to outlying beaches, if possible, in order to limit the extent of contamination and to allow better access for subsequent cleanup.

On the eastern shore of Admiralty Inlet, Levasseur Inlet, although uncharted, appears to offer both marine access and a potential site for the temporary storage and/or incineration of debris. Consultation with archaeological experts should precede any shoreline activity in this area due to the large number of archaeological sites.

SAFE HAVENS

No potential safe havens were identified in this map area; the closest candidate sites are those identified on Map 25, approximately 75 km north of Yeoman Island.

Operational Map 23 - *Yeoman Island*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
74	Kakiak Point	98.20
75	Yeoman Island	89.60
76	Moffett Inlet	98.90
77	Levasseur Inlet	98.50

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Char Ch
- Narwhal Na
- Bowhead Bh

Environmental Description

R 74 Seasonal hunting camps south of Turner Cliffs to below Kakiak Point are occupied during late summer by Arctic Bay residents. Seals are hunted throughout Admiralty Inlet. Narwhal, harp seals, and ringed seals are taken in the open water, while bearded seals are taken in open water as well as at the floe edge. Residents also hunt ducks, geese, and walrus adjacent to the Giants Castle and Turner Cliffs in the summer and fall. Domestic fishing for Arctic char occurs at Vista River in the summer (14, 22). The camp at Kakiak Point is used as a staging point for tourism activities (56).

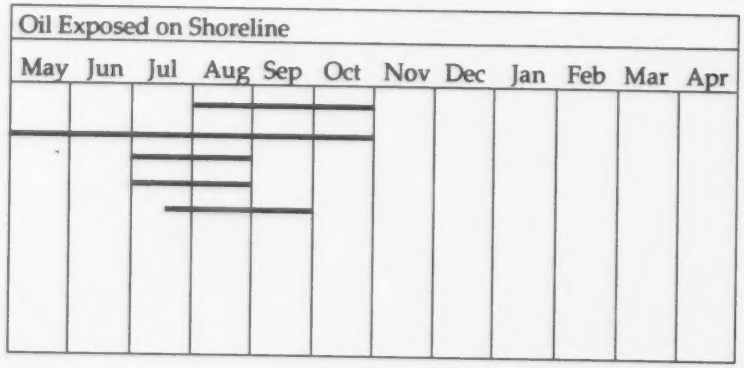
R 75 Seasonal camps are located on coastal Brodeur Peninsula, Yeoman Island, Iglurjuaq Island, Steensby Peninsula, and the Borden Peninsula coast of Moffet Inlet. Migrations of anadromous char in rivers on Steensby Inlet, and those flowing into Moffet Inlet from the east and Fleming and Fabricius Fiords support an important domestic fishery for Arctic Bay residents during spring and summer. Whale hunting was not known to extend south of Yeoman Island (22); however, today hunting extends south of Yeoman Island (56). Ducks and geese are hunted in the open water off Yeoman Island, between Yeoman Valley and Pusingnajojaq Hill, and north of Ikpikittuarjuk Bay on Moffet Inlet. Caribou are hunted by Arctic Bay residents on the Fleming River and Steensby Peninsula (14).

R 76, 77 A number of archaeological sites are found in Areas 76 and 77.

Na 74 A large proportion of the Lancaster Sound narwhal population summers in southern Admiralty Inlet and is often seen moving back and forth along the coast of Brodeur Peninsula (15, 17, 32, 41).

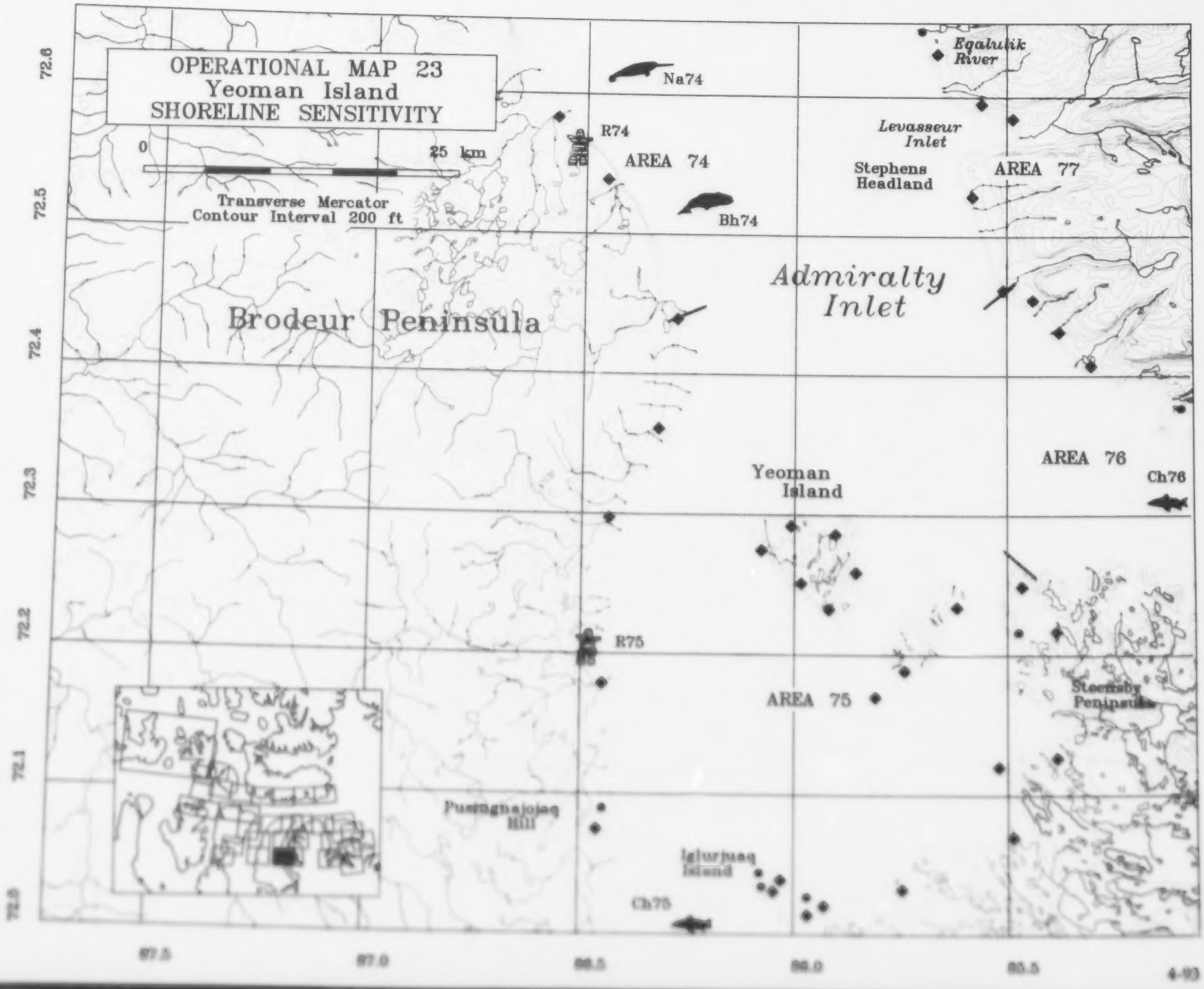
Bh 74 During July and August, a significant number of bowheads are found in southern Admiralty Inlet and are sometimes observed moving back and forth along the coast of Brodeur Peninsula (17, 41).

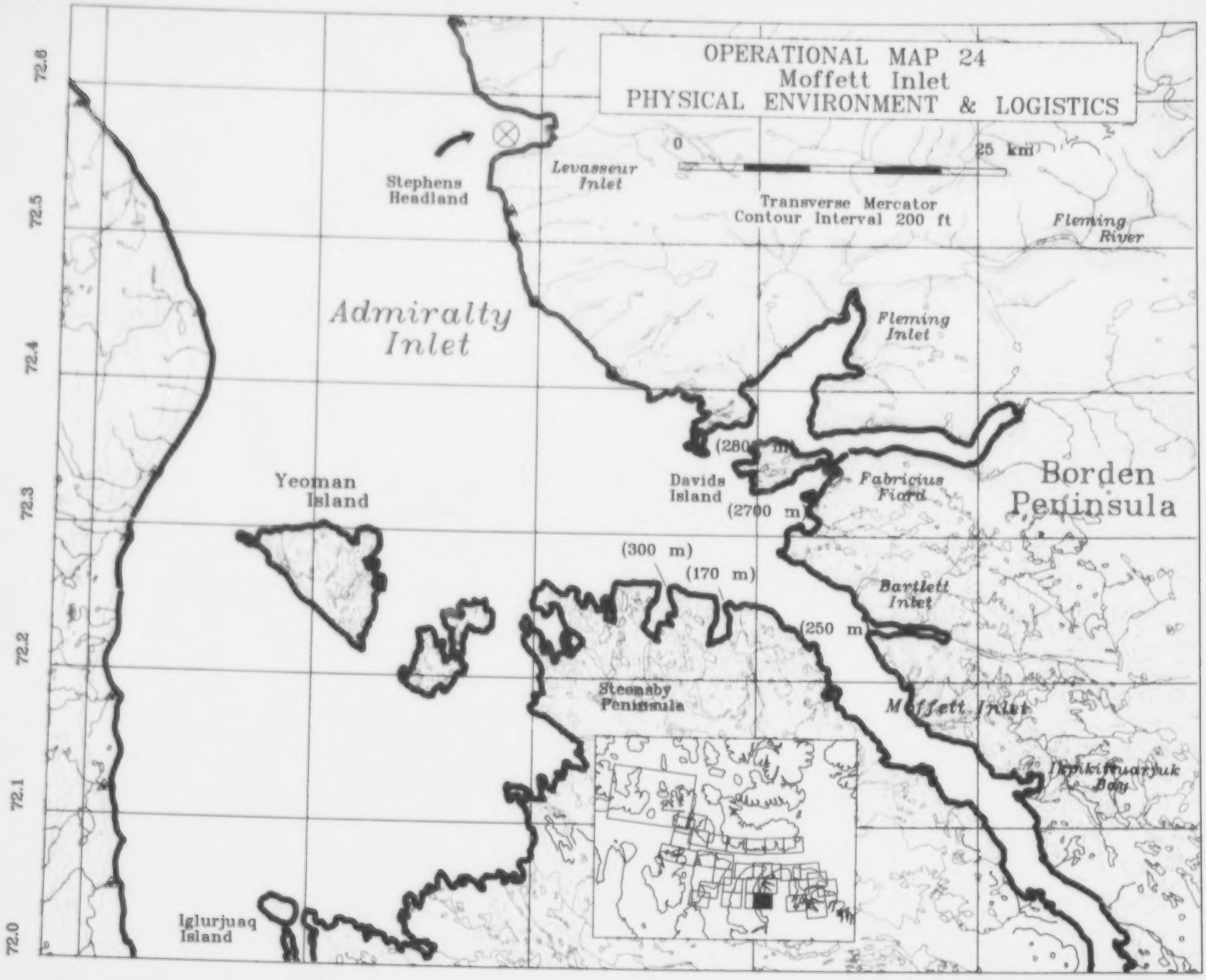
Ch 75, 76 Anadromous Arctic char are known to occur in the vicinity of Berlinguet Inlet, Ikpikittuarjuk Bay, Bartlett Inlet, Fabricius Fiord, and Eqalulik River during summer feeding and migration (13, 42, 67, 74).



Occurrence of Species and Resource Use

R 74
R 75
Na 74
Bh 74
Ch 75, 76


OPERATIONAL MAP 23
Yeoman Island
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 200 ft
Na74
R74
AREA 74
Bh74
Eqalulik River
Levasseur Inlet
Stephens Headland
AREA 77
Admiralty Inlet
Brodeur Peninsula
Yeoman Island
AREA 76
Ch76
R75
AREA 75
Steensby Peninsula
Pusunghajojaq Hill
Iglurjuaq Island
Ch75
72.6
72.5
72.4
72.3
72.2
72.1
72.0
97.5
97.0
96.5
96.0
95.5
4-93


OPERATIONAL MAP 24
Moffett Inlet
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Contour Interval 200 ft
Stephens Headland
Levasseur Inlet
Admiralty Inlet
Fleming River
Fleming Inlet
(280 m)
Yeoman Island
Davids Island
(2700 m)
Fabricius Fiord
Borden Peninsula
(300 m)
(170 m)
Bartlett Inlet
(250 m)
Steensby Peninsula
Moffett Inlet
Iglurjuaq Island
72.6
72.5
72.4
72.3
72.2
72.1
72.0
4-94
86.0
85.5
85.0
84.5
84.0

Operational Map 24 - *Moffett Inlet*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 25
Topographic Map - 48B
Hydrographic Chart - 7220, 7503, 7568
Video Tapes (reference number) - none

ACCESS

The waters in this area are largely uncharted: Only a single line of depth soundings are charted, indicating mid-channel depths of 400 m or more decreasing to about 40 m near Yeoman Island. Several islets and shoal hazards are noted in the vicinity of Yeoman Island. No depths are charted for the waters either south or east of Yeoman Island.

Travel over ice in this area should be possible from November to June/July.

COUNTERMEASURES

All efforts should be made to prevent oil from reaching the shorelines in the southern and eastern portions of this map area: Their more intricate nature will greatly increase subsequent cleanup requirements and the numerous islets and shoal hazards will make marine access difficult.

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended. Dispersant application could be considered in offshore and nearshore areas, but is cautioned against in shallow waters in this area due to the lack of knowledge of the effects of dispersed oil on narwhals.

North of Yeoman Island, the shorelines on both sides of Admiralty Inlet offer few opportunities for shoreline protection techniques. In order to limit inshore contamination, several inlets in the southeast portion of the map area could be sealed using exclusion booming techniques. These include the inlets on the northern extent of Steensby Peninsula (300 m, 170 m), Bartlett Inlet (250 m), and the channels on either side of Davids Island (2800 m, 2700 m). In order to limit contamination of coastal plains and river outfalls, consideration could be given to directing approaching oil to neighbouring cliff and raised beach shores. Oil approaching the Steensby Peninsula (southeast of Yeoman Island) should be contained on or directed to outlying beaches, if possible, in order to limit the extent of contamination, and to allow better access for subsequent cleanup.

On the eastern shore of Admiralty Inlet, Levasseur Inlet, although uncharted, appears to offer both marine access and a potential site for the temporary storage and/or incineration of debris. Consultation with archaeological experts should precede any shoreline activity in this area due to the large number of archaeological sites.

SAFE HAVENS

No potential safe havens were identified in this map area; the closest candidate sites are those identified on Map 25 approximately 75 km north of Yeoman Island.

Operational Map 24 - *Moffett Inlet*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
74	Kakiak Point	98.20
75	Yeoman Island	89.60
76	Moffett Inlet	98.90
77	Levasseir Inlet	98.50

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Highly Important R
- Narwhal Na
- Bowhead Bh
- Char Ch

Environmental Description

R 74 Seasonal hunting camps south of Turner Cliffs to below Kakiak Point are occupied during late summer by Arctic Bay residents. Seals are hunted throughout Admiralty Inlet. Narwhal, harp seals, and ringed seals are taken in the open water, while bearded seals are taken in open water as well as at the floe edge. Residents also hunt ducks, geese, and walrus adjacent to the Giants Castle and Turner Cliffs in the summer and fall. Domestic fishing for Arctic char occurs at Vista River in the summer (14, 22). The camp at Kakiak Point is used as a staging point for tourism activities (56).

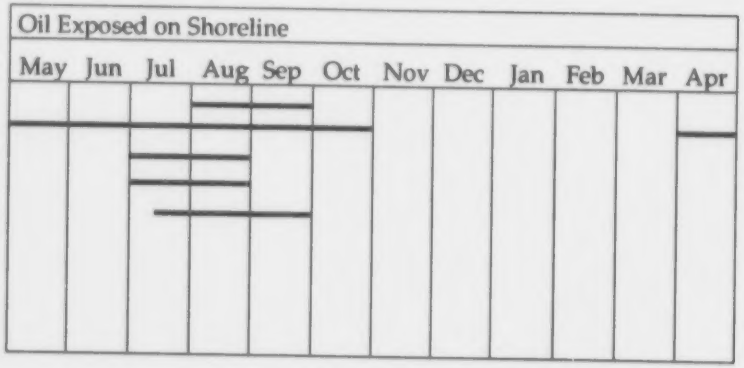
R 75, 76 Seasonal camps are located on coastal Brodeur Peninsula, Yeoman Island, Iglurjuaq Island, Steensby Peninsula, and the Borden Peninsula coast of Moffet Inlet. Migrations of anadromous char in rivers on Steensby Inlet, and those flowing into Moffet Inlet from the east and Fleming and Fabricius Fiords support an important domestic fishery for Arctic Bay residents during spring and summer. Whale hunting does not extend south of Yeoman Island (22). Ducks and geese are hunted in the open water off Yeoman Island, between Yeoman Valley and Pusingnajojaq Hill, and north of Ikpikittuarjuk Bay on Moffet Inlet. Caribou are hunted by Arctic Bay residents on the Fleming River and Steensby Peninsula (14).

R 76, 77 A number of archaeological sites are found in Areas 76 and 77.

Na 74 A large proportion of the Lancaster Sound narwhal population summers in southern Admiralty Inlet and is often seen moving back and forth along the coast of Brodeur Peninsula (15, 17, 32, 41).

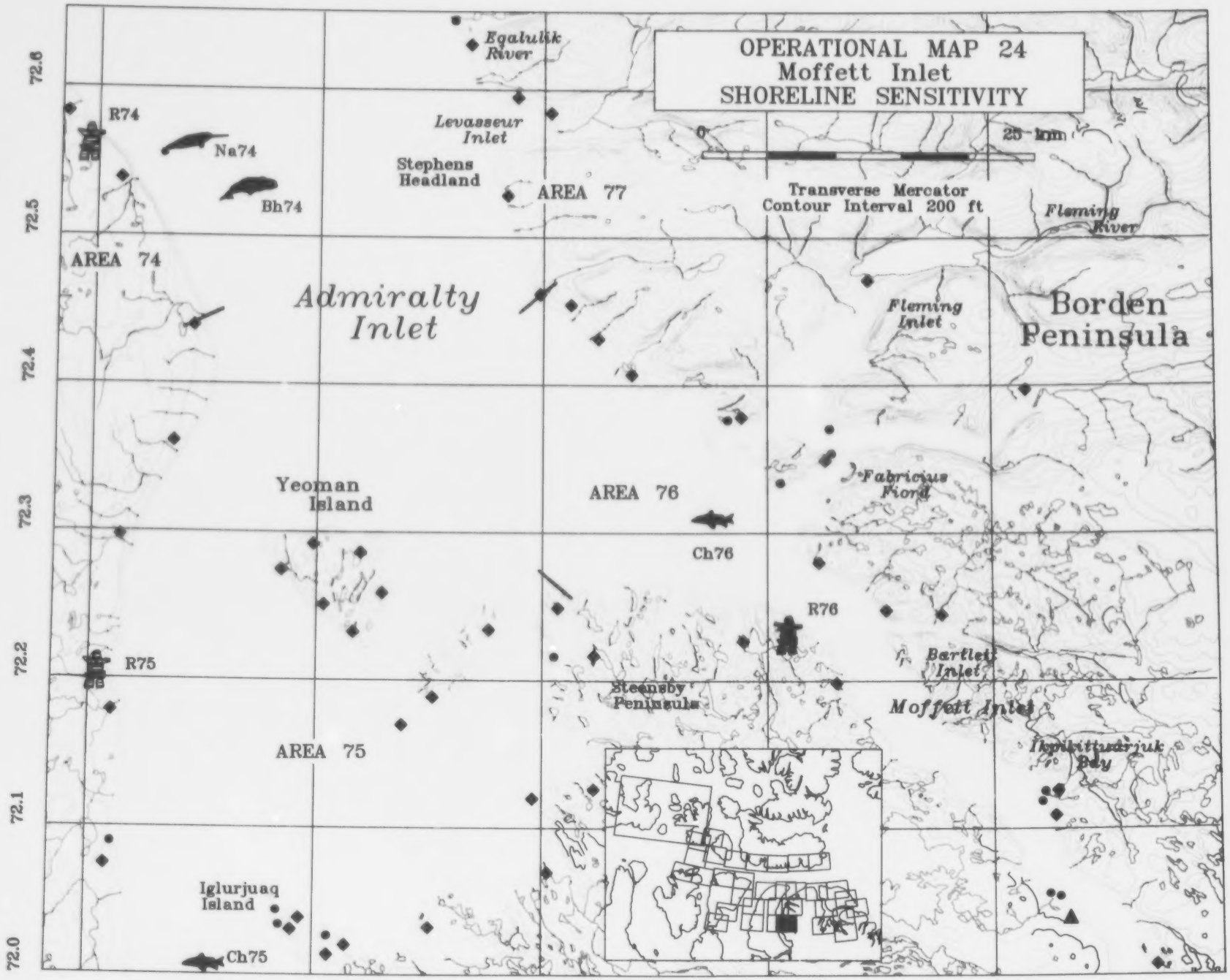
Bh 74 During July and August, a significant number of bowheads are found in southern Admiralty Inlet and are sometimes observed moving back and forth along the coast of Brodeur Peninsula (17, 41).

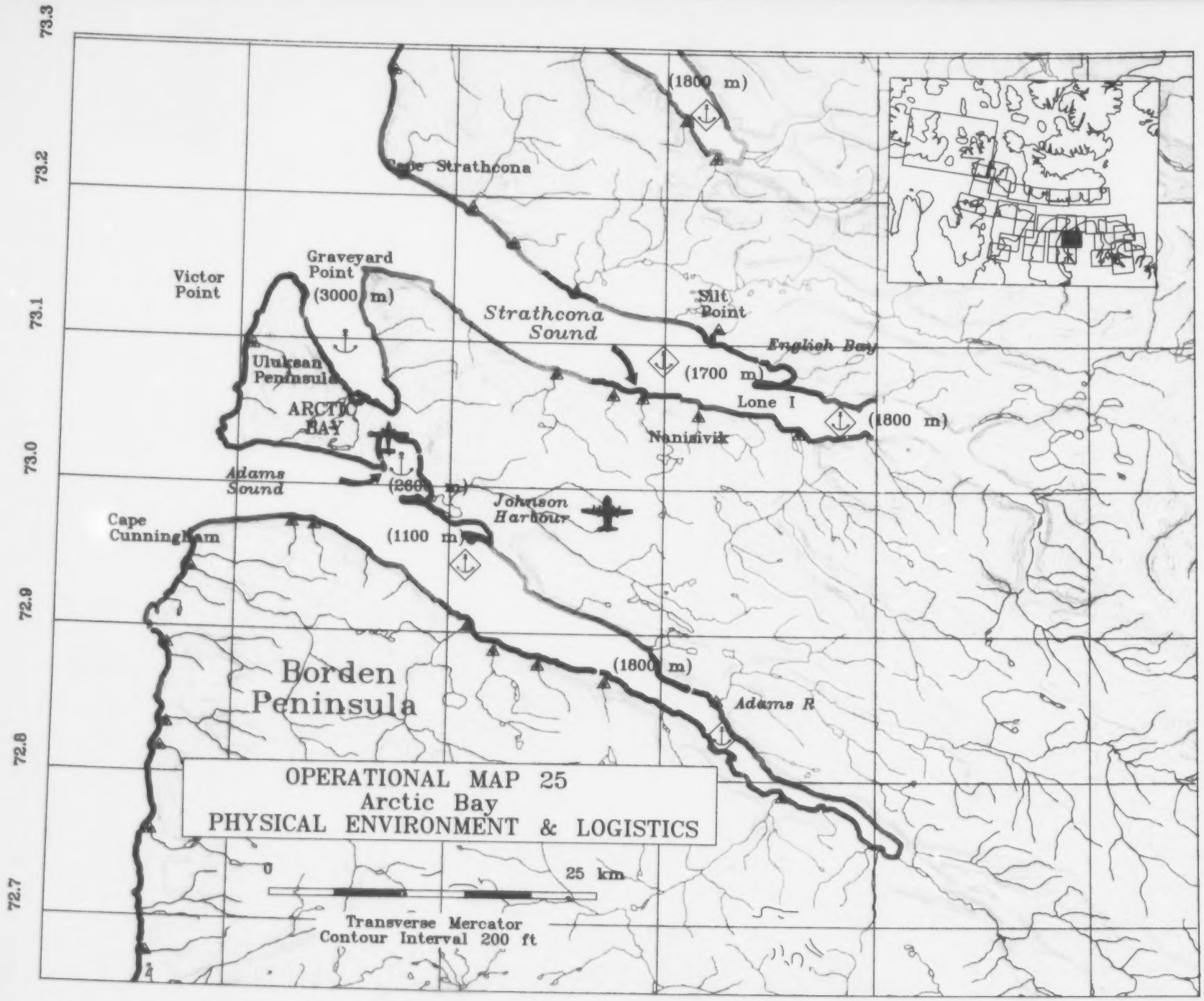
Ch 75, 76 Anadromous Arctic char are known to occur in the vicinity of Berlinguet Inlet, Ikpikittuarjuk Bay, Bartlett Inlet, Fabricius Fiord, and Eqalulik River during summer feeding and migration (13, 42, 67, 74).



Occurrence of Species and Resource Use

R 74
R 75, 76
Na 74
Bh 74
Ch 75, 76


OPERATIONAL MAP 24
Moffett Inlet
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 200 ft
Egalulik River
Levasseur Inlet
Stephens Headland
AREA 77
Fleming River
R74
Na74
Bh74
AREA 74
Admiralty Inlet
Fleming Inlet
Borden Peninsula
Yeoman Island
AREA 76
Fabricius Fiord
Ch76
R76
R75
Bartlett Inlet
Steensby Peninsula
Moffett Inlet
Ikpiarjuk Bay
AREA 75
Iglurjuaq Island
Ch75
72.6
72.5
72.4
72.3
72.2
72.1
72.0
86.5
86.0
85.5
85.0
84.5
4-97


73.3
73.2
73.1
73.0
72.9
72.8
72.7
(1800 m)
Cape Strathcona
Graveyard Point
(3000 m)
Victor Point
Silt Point
Strathcona Sound
English Bay
(1700 m)
Lone I
(1800 m)
Nanisivik
Uluksan Peninsula
ARCTIC BAY
Adams Sound
(260 m)
Johnson Harbour
Cape Cunningham
(1100 m)
Borden Peninsula
(1800 m)
Adams R
OPERATIONAL MAP 25
Arctic Bay
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Contour Interval 200 ft
4-98
85.5
85.0
84.5
84.0
83.5

Operational Map 25 - *Arctic Bay*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 25
Topographic Map - 48B, 48C
Hydrographic Chart - 7220, 7503, 7512, 7568
Video Tapes (reference number) - none

ACCESS

Access to shore by vessel in this area is good; the 20 m depth contour lies generally within 750 m of shore except off Victor Point on the Uluksan Peninsula. Good anchorages in deep water are available at the head of Baillarge Bay (55 m), in Strathcona Sound (two east of Nanisivik wharf, 80 and 40 m), one in English Bay (50 m), at the head of Victor Bay (50 m), in Arctic Bay (50 m), and in Johnson Harbour (35 m).

Travel over ice in the area should be possible from November to June/July.

A wharf 100 m long with a least charted depth of 9.1 m (west end) exists at Nanisivik. A good landing beach exists in front of the Hamlet of Arctic Bay.

A 1950 m x 45 m year-round gravel airstrip serves Nanisivik and Arctic Bay; roads connect the airfield to the Hamlet of Arctic Bay and the Nanisivik wharf. The presence of an airfield, wharf, mine site, hamlet, and good anchorages make Nanisivik/Arctic Bay an ideal staging site for a major spill response in the area.

COUNTERMEASURES

In ice concentrations down to 6 tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. A condition on burning in this area is that winds carry smoke away from the community of Arctic Bay. Dispersant applications to protect waterfowl should be considered in the offshore and nearshore waters of Admiralty Inlet and in sounds and bays in areas where the water depth exceeds 50 m and sufficient wave energy exists to promote dispersion. The conservative depth of 50 m is chosen due to the lack of knowledge of the effects of dispersed oil on narwhals.

The mouth of Arctic Bay (2600 m) could be sealed using exclusion booming techniques to prevent oil from entering or escaping; tidal currents are reported as slight. Johnson Harbour could be similarly sealed. English Bay, in Strathcona Sound, could be protected by exclusion booming from Lone Island north to the mainland (1700 m) and east to the mainland (400 m).

Depending on tidal current flows, the heads of Strathcona and Adams Sounds and Baillarge Bay could be protected by exclusion booming (lengths of boom of 1800 m would suffice). The head of Victor Bay could be protected by 3000 m of boom. The use of high tensile strength boom is recommended since, in the water depths in the sounds and bays, no intermediate anchoring may be possible. River deltas could be protected by diversion booming directed oil into adjacent, less sensitive talus or raised beach coasts.

Cliff, talus or raised beach shores that are not heavily oiled and are exposed to wave action may not require active cleaning efforts. Arctic Bay and the Nanisivik area could be considered as temporary storage sites for collected oily material and/or for its incineration.

SAFE HAVENS

Potential areas for vessel lightering or stabilization operations are the Nanisivik wharf and anchorages in Strathcona Sound (with the booming operations described above in place), the head of Baillarge Bay (with exclusion booming to trap oil inside a restricted length of the bay), Johnson Harbour (with exclusion booming) and up Adams Sound east of the Adams River (with exclusion booming to trap oil inside a restricted area). These sites are noted as possible safe havens on the basis of good protection and excellent oil containment potential; however, the entire area is identified as being of high sensitivity, and expert consultation on sensitivity trade-offs would be required at the time of an incident to confirm site suitability.

Operational Map 25 - *Arctic Bay*

Environmental Description

R 77-80 A number of archaeological sites are found in Areas 76 to 80. Area 80 lies within the proposed North Baffin/Lancaster Sound National Park (16).

R 77 Numerous seasonal, traditional camps have been established south of Cape Cunningham to Stephens Headland. Domestic fishing occurs at the mouth of the Eqalulik River in Levasseur Inlet and north of Qikirtaukkat Islands. Ducks and geese are also hunted in the Cape Cunningham and Levasseur Inlet area, and seals are hunted year-round (14).

R 78 The community of Arctic Bay is located on Adams Bay. Numerous seasonal and traditional camps have been established in Adams Sound. Whale hunting occurs in the open water season, while seal hunting occurs year-round (14).

R 79 Seasonal camps are located at Victor Point and south of Victor Point on the Uluksan Peninsula. Arctic Bay residents hunt geese and ducks off Victor Point during the spring and open water season, narwhal in Victor Bay in August and September, and ringed seals near and offshore year-round. Domestic fishing by Arctic Bay residents occurs south of Graveyard Point and adjacent to the Uluksan Peninsula in Victor Bay.

R 80 During spring and the open water season, ducks and geese are hunted in English Bay and on the south shore of Strathcona Sound opposite English Bay. Traditional, seasonal hunting camps are located between Ship Point to Graveyard Point, including Strathcona Sound. Narwhal are hunted nearshore and offshore during spring and in Strathcona Sound during the open water season (14).

Na 80 During mid- to late July, large numbers of narwhals move into Admiralty Inlet through shore leads along the Borden Peninsula (28, 29, 35).

Ch 77, 78 Anadromous Arctic char are known to occur in the vicinity of Eqalulik River and Arctic Bay during summer feeding and migration (42, 67, 74).

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

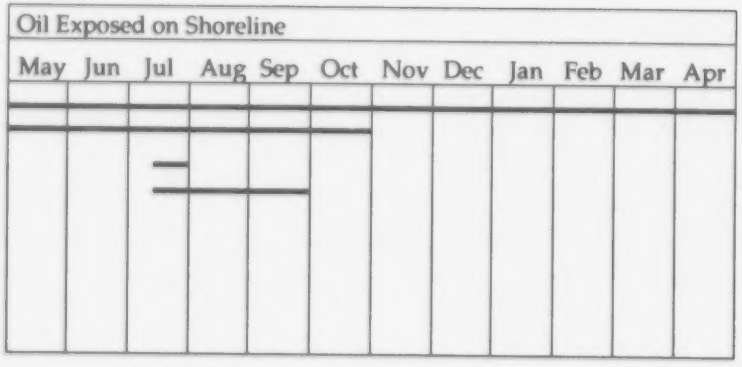
* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
77	Levasseur Inlet	98.50
78	Arctic Bay	116.40
79	Victor Point	80.50
80	Strathcona Sound	103.40

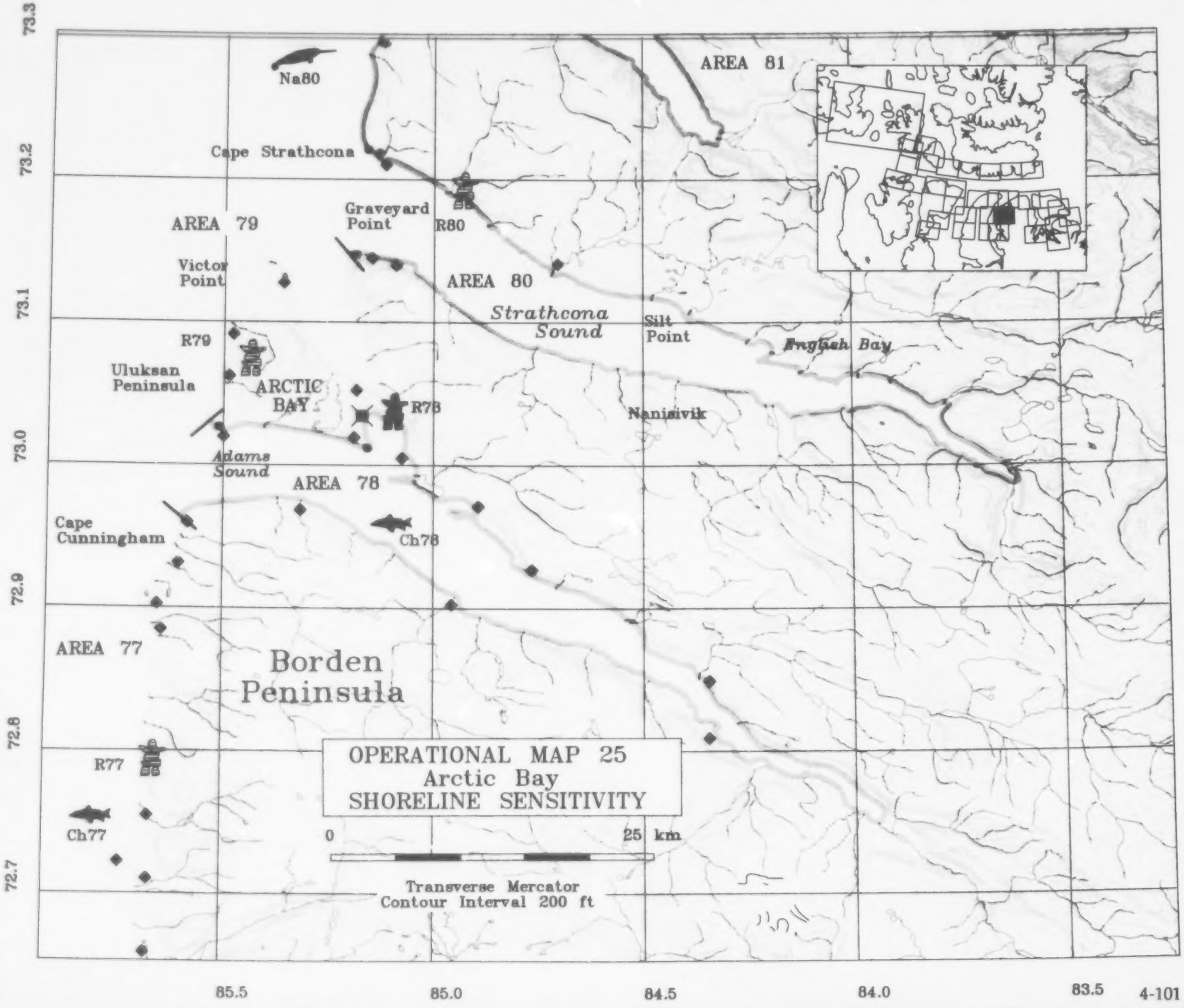
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

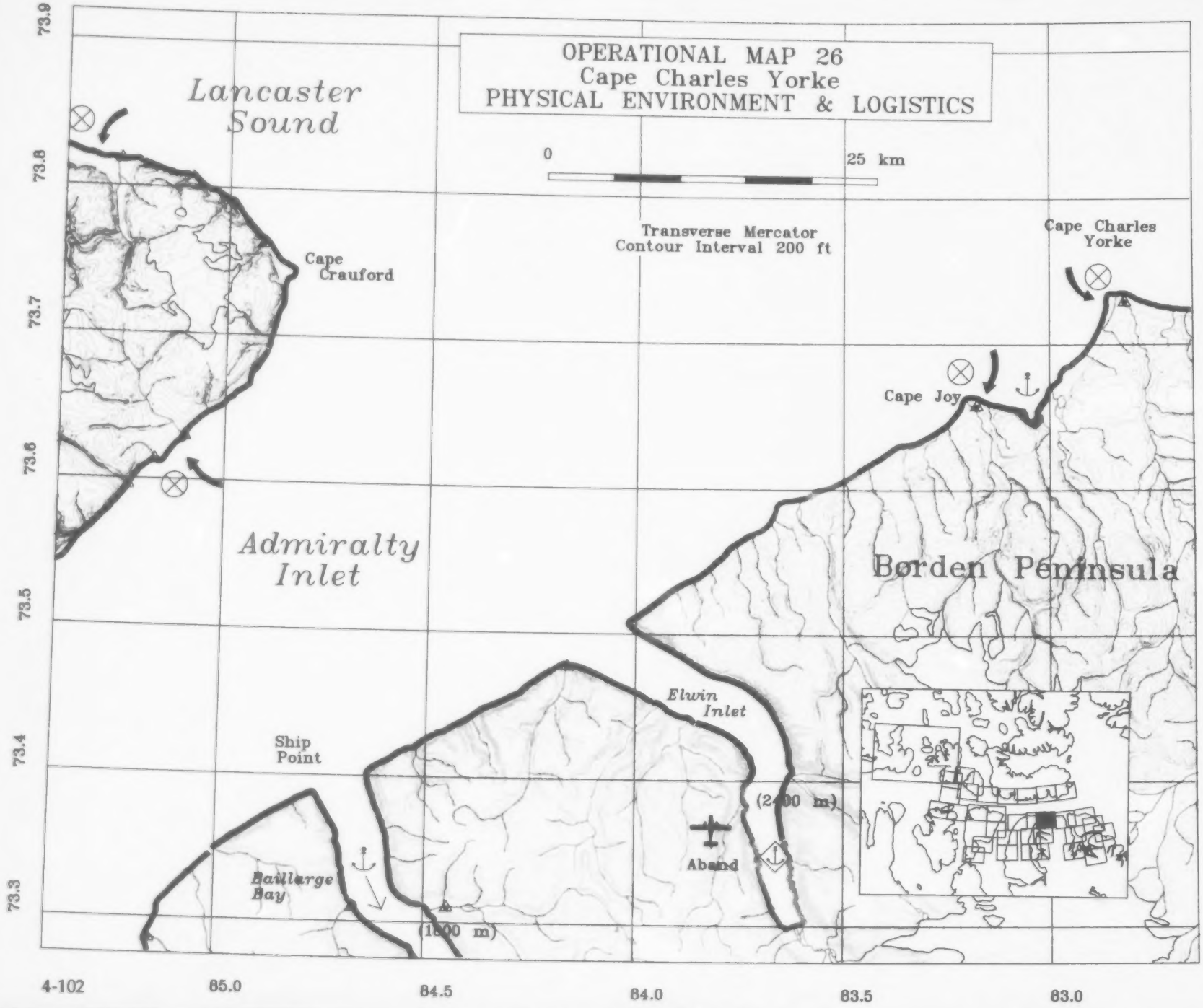
- Greatest Importance R
- Highly Important R
- Narwhal Na
- Char Ch



Occurrence of Species and Resource Use

R 77-79
R 80
Na 80
Ch 77, 78


73.3
73.2
73.1
73.0
72.9
72.8
72.7
Na80
Cape Strathcona
AREA 81
AREA 79
Graveyard Point
R80
AREA 80
Victor Point
Strathcona Sound
Silt Point
English Bay
R79
Uluksan Peninsula
ARCTIC BAY
R78
Nanisivik
Adams Sound
AREA 78
Cape Cunningham
Ch78
AREA 77
Borden Peninsula
R77
Ch77
OPERATIONAL MAP 25
Arctic Bay
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 200 ft
85.5
85.0
84.5
84.0
83.5


OPERATIONAL MAP 26
Cape Charles Yorke
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
Contour Interval 200 ft
Lancaster Sound
Admiralty Inlet
Cape Crauford
Cape Charles Yorke
Cape Joy
Borden Peninsula
Elwin Inlet
Ship Point
Baillarge Bay
Abend
(2400 m)
(1500 m)
73.9
73.8
73.7
73.6
73.5
73.4
73.3
4-102
85.0
84.5
84.0
83.5
83.0

Operational Map 26 - *Cape Charles Yorke*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 26
Topographic Map - 48C, 48D
Hydrographic Chart - 7220, 7503, 7568
Video Tapes (reference number) - none

ACCESS

Deep water exists close to shore in this area, with some shoaling noted near river outfalls. Anchorage is available in Baillarge Bay in 55 m near the head of the bay; depths exceed 500 m at its entrance. Elwin Inlet, although uncharted, is reported to have very deep water with a few rock islets near its head. Anchorage is also available in the open cove close eastward of Cape Joy; anchorage is in 37 m and a shoal hazard of 18.3 m must be crossed at its entrance.

There is a 1520 m x 15 m abandoned natural surface runway at Elwin Inlet.

Vessel access and shore operations may be possible at the gravel promontory and beaches at Cape Joy, and at the narrow beaches in the vicinity of Cape Charles Yorke and eastward.

Travel over ice in the area should be possible from November to June/July.

The shoreline shown in the northwest corner of this map (Cape Crauford-Brodeur Peninsula) is described in Operational Map 21.

COUNTERMEASURES

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater. In open water conditions offshore and nearshore, containment for recovery or burning is recommended. Dispersant application in offshore and nearshore waters may be justified to protect waterfowl, but is cautioned against in shallow and protected waters due to possible impacts on narwhal populations.

Depending on tidal currents, the heads of Baillarge Bay (1800 m) and Elwin Inlet (2400 m) could be sealed using exclusion booming techniques to prevent oil from entering or escaping. Water depths in these bays may not allow intermediate anchoring, therefore dictating the use of high-strength boom.

The coastline in this area is predominated by exposed cliff and raised beach shores which may not require active cleaning efforts if not heavily contaminated. Beaches in the vicinity of Cape Joy and Cape Charles Yorke could be considered as sites for the temporary storage and/or incineration of collected oily material.

SAFE HAVENS

Potential sites for vessel lightering or stabilization operations are the anchorage in Baillarge Bay and inside Elwin Inlet. The latter is uncharted and would require a depth survey if it is to be used. Both sites are noted as possible safe havens on the basis of good protection and excellent oil contaminant potential; however, the entire area is identified as being of high sensitivity and expert consultation on sensitivity trade-offs would be required at the time of an incident to confirm site suitability.

Operational Map 26 - *Cape Charles Yorke*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
70	Stanley Point	83.90
71	Cape Crauford	91.90
80	Strathcona Sound	103.40
81	Elwin Inlet	101.80
82	Cape Joy	108.90
83	Cape Charles Yorke	116.60

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Narwhal Na
- Fulmer Fu
- Gull Gu
- Sea Duck SD
- Fulmer Colony Fu

Environmental Description

R 71 Arctic Bay residents hunt ringed and bearded seals on the sea ice and at ice cracks through much of Admiralty Inlet and southern Lancaster Sound during spring and at the floe edge during July and August. Although much of this hunting occurs in the offshore, some hunting likely occurs in the nearshore as well. Concentrated hunting in the shore leads during June and July occurs primarily along the Borden Peninsula. Harp and bearded seals are also taken in this area during the summer open water period. Polar bears are hunted on the sea ice of Admiralty Inlet, Strathcona, and Adams Sounds during winter and spring. Hunter harvest is concentrated along the Brodeur coast opposite Adams and Strathcona Sounds (32). Narwhals are hunted from boats during August, primarily on the west side of Admiralty Inlet from the Kakiak Point camp (22). A small number of walrus are taken at the floe edge off Cape Crauford in spring in some years (14, 22). During the spring and late spring, the Cape Crauford area is used as a staging point for tourist floe edge trips (56). Seasonal hunting camps are located south of Cape Crauford. During summer, Arctic Bay residents hunt duck and geese along the Brodeur Peninsula coastline.

R 80-83 Areas 80 to 83 lie within the proposed North Baffin/Lancaster Sound National Park (16).

R 81 From April to July and in August, Arctic Bay residents hunt seals at their breathing holes on sea ice in Baillarge Bay (43). However, harvests are not particularly concentrated in this area (22). Traditional, seasonal camps are located between the south headland of Elwin Inlet and Baillarge Bay (56). Ice cracking occurs off headlands in Admiralty Inlet with some predictability, with cracks occurring in the winter ice and opening up in the late spring. These cracks are used by Arctic Bay hunters to hunt seals and narwhal. The narwal hunt occurs in July for a short period after the cracks open up. The headland of Elwin Bay is a very significant marine mammal hunting area for Arctic Bay hunters due to the position of the ice edge in the spring.

R 82 Seasonal hunting camps are located between Elwin Inlet and Cape Charles Yorke (56). The area is used by Arctic Bay residents in the late spring to hunt polar bears.

Na 71 From mid- to late July, a large proportion of the Lancaster Sound narwhal population move into Admiralty Inlet through shore leads and ice cracks (15, 17, 28).

Na 80-82 From mid- to late July, large numbers of narwhals move into Admiralty Inlet through shore leads along the Borden Peninsula (28, 29, 35).

Fu 71 From late July to late August, thousands of fulmars feed offshore near Cape Crauford (37).

Fu 80 From late July to late August, thousands of fulmars feed in large flocks along the coast north of Cape Strathcona and in Strathcona Sound (37).

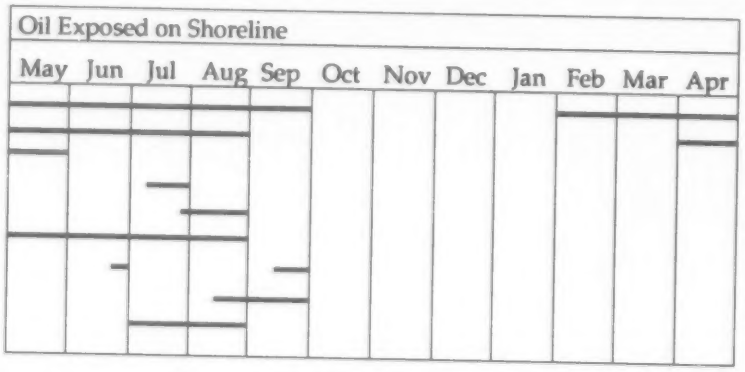
Fu 81 A large colony of fulmars (25,000 pairs) nests along a 12 km section of cliff between Baillarge Bay and Elwin Inlet (7).

Fu 82 In late June and again in mid- to late September, thousands of fulmars occur briefly along this coast (36).

Gu 82 From mid-August to late September, thousands of kittiwakes (43/km²) occur along the coast from Cape Joy to Navy Board Inlet (36).

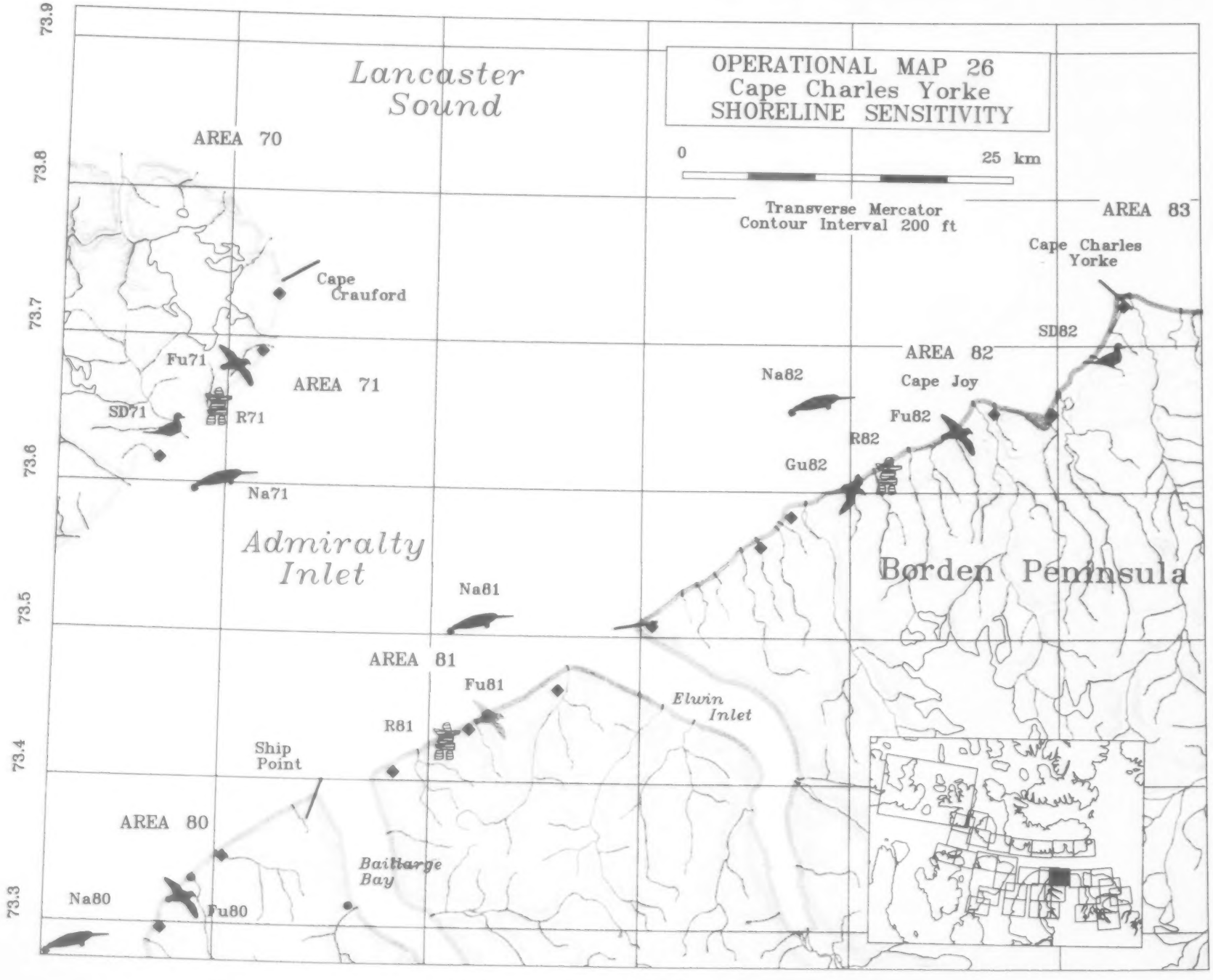
SD 71 During July and August, thousands of eiders occur along this coast south of Cape Crauford (37).

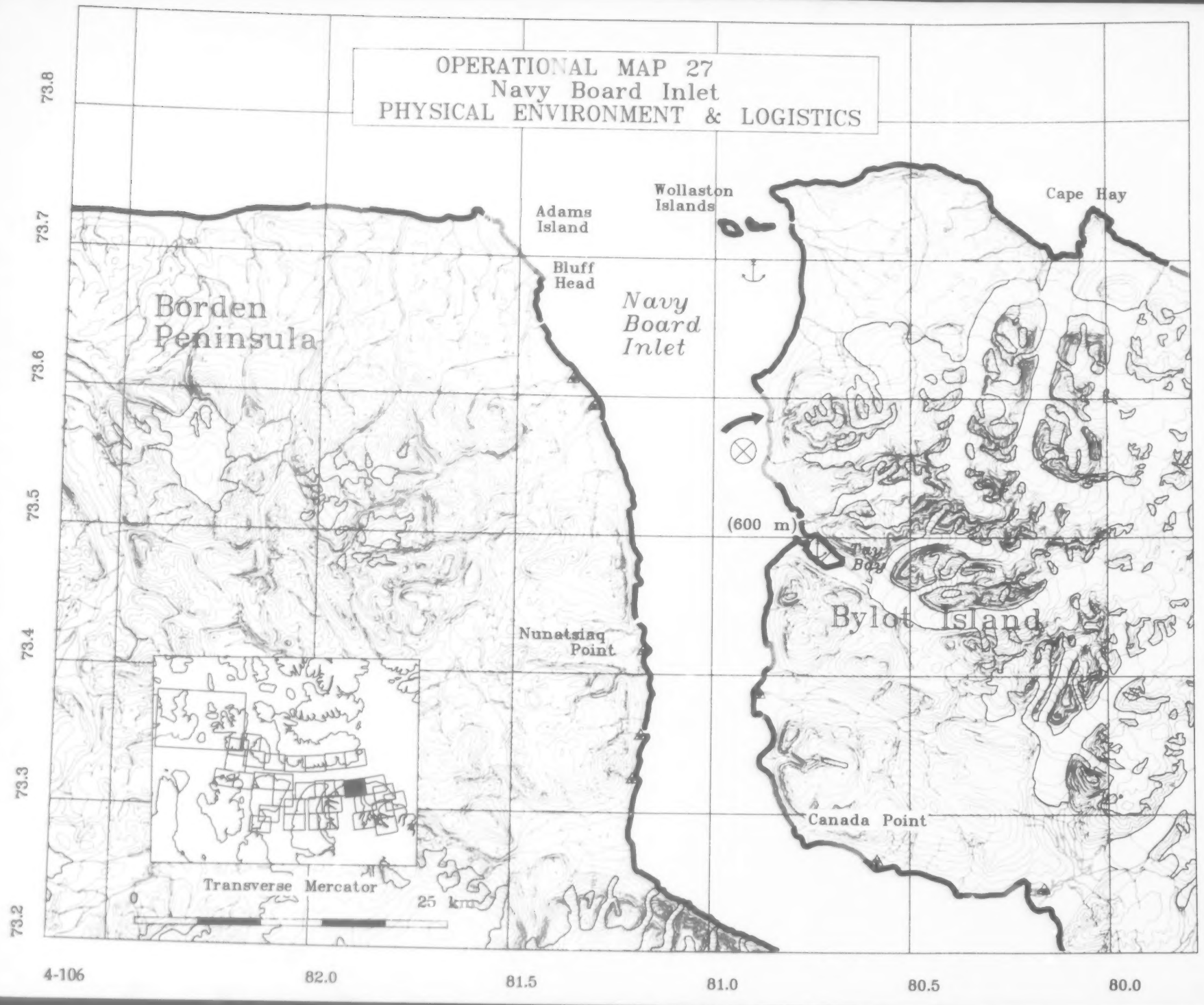
SD 82 During July and August, thousands of eiders and oldsquaws occur from Cape Joy to Cape Charles Yorke (36, 37).



Occurrence of Species and Resource Use

- R 71
- R 81
- R 82
- Na 71, 80-82
- Fu 71, 80
- Fu 81
- Fu 82
- Gu 82
- SD 71, 82


OPERATIONAL MAP 26
Cape Charles Yorke
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 200 ft
Lancaster Sound
Admiralty Inlet
Borden Peninsula
AREA 70
AREA 71
AREA 80
AREA 81
AREA 82
AREA 83
Cape Crauford
Cape Charles Yorke
Cape Joy
Elwin Inlet
Ship Point
Baillarge Bay
Fu71
SD71
R71
Na71
Na81
Fu81
R81
Na80
Fu80
Na82
Fu82
R82
Gu82
SD82
73.9
73.8
73.7
73.6
73.5
73.4
73.3
85.0
84.5
84.0
83.5
83.0


OPERATIONAL MAP 27
Navy Board Inlet
PHYSICAL ENVIRONMENT & LOGISTICS
Wollaston Islands
Cape Hay
Adams Island
Bluff Head
Borden Peninsula
Navy Board Inlet
(600 m)
Tay Bay
Bylot Island
Nunatsiaq Point
Canada Point
Transverse Mercator
0
25 km
73.8
73.7
73.6
73.5
73.4
73.3
73.2
82.0
81.5
81.0
80.5
80.0

Operational Map 27 - *Navy Board Inlet*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 26
Topographic Map - 48D
Hydrographic Chart - 7212, 7220, 7368
Video Tapes (reference number) - none

ACCESS

Shoal water hazards are indicated along the coastline near Cape Charles Yorke (just west of map boundary), near Adams Island, and near Wollaston Island. In other waters on the north coast of Borden Peninsula and Bylot Islands, nearshore waters are largely uncharted. In Navy Board Inlet, deep water exists very close to shore except for several small shoal areas near river outfalls.

Currents are generally eastward along the north coast of Borden Peninsula and Bylot Island in this area, and in the range of 35 to 65 cm/s. A weak transient current is reported southward through Navy Board Inlet. Strong tide rips have been reported in the vicinity of Wollaston Island and the entrance to Navy Board Inlet.

Anchorage can be obtained close south of Wollaston Islands, noting shoal hazards in this area. Anchorage is also available in Tay Bay in 42 m, although not recommended for large vessels due to the limited area and unreliable holding.

The shoreline between Canada Point and Tay Bay has several beaches that may allow shore access. A good landing beach is reported about 10 km north of Tay Bay on the north side of an old glacial river mouth.

COUNTERMEASURES

All efforts should be made to prevent oil from entering Navy Board Inlet in order to limit the extent and persistence of contamination.

In ice concentrations of 6 tenths or greater in offshore and nearshore waters, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended, however, containment operations may be complicated by the strong coastal currents in this area.

Dispersant application in offshore and nearshore waters may be justified to protect waterfowl.

The breadth of Navy Board Inlet will not allow exclusion booming techniques to be used; rather, oil approaching the inlet could be diverted onto beaches on the north coast of Borden Peninsula or Bylot Islands, as conditions permit. Oil that enters Navy Board Inlet should be diverted to beaches at the first opportunity in order to limit the extent of contamination in the inlet. If threatened, Tay Bay could be sealed using exclusion booming to seal its 600 m wide entrance.

In the north half of this map area, the highly exposed cliff shorelines that predominate may not require active cleaning efforts if not heavily contaminated. Shoreline cleanup operations in Navy Board Inlet could be based from the several noted locations that allow beach access, and in particular the landing beach 10 km north of Tay Bay. Care should be taken not to disturb seasonal hunting camps and archaeological sites in the vicinity.

SAFE HAVENS

Although limited in area, Tay Bay is a potential site for lightering and/or stabilization operations on a stricken vessel, offering good protection and an excellent opportunity to contain the spread of any subsequent release of oil. However, Tay Bay is within an area identified as being of very high sensitivity and would require expert consultation on sensitivity trade-offs if it were to be considered.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

SHORELINE SENSITIVITY

Operational Map 27 - *Navy Board Inlet*

Legend

*Shoreline Sensitivity**

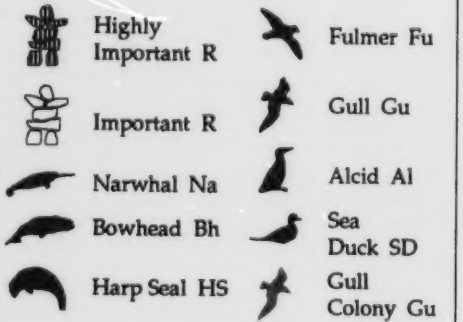
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
83	Cape Charles Yorke	116.60
84	Nunatsiaq Point	102.40
85	Eastern Borden Peninsula	86.10
100	Canada Point	106.20
101	Tay Bay	127.00
102	Cape Hay	116.30

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp



Environmental Description

R 83-85, 99-103 These areas lie within the proposed North Baffin/Lancaster Sound National Park (16). An historic site is at Canada Point (8).

R 83 The spring floe edge, which extends from north of Bluff Head to the headland of Bylot Island, provides excellent hunting opportunities for polar bears. Hunting may occur until May 31 in some years. Seals and narwhal may be hunted at the floe edge in Admiralty Inlet during spring.

R 84 Seasonal camps are located in the area south of Bluff Head beyond Nunatsiaq Point. Hunting for narwhal occurs at the floe edge in the spring, while in late spring and summer hunting for ducks, whales, and seals occurs (56).

R 85 Seasonal hunting camps are in this area. During late spring and summer, walrus and narwhal are hunted near outpost camps in Eclipse Sound and Navy Board Inlet. Seals are hunted in the coastal area near the camps in Navy Board Inlet. Fishing for Arctic char occurs north and south of Low Point in summer.

R 100, 101 During the open water season, ducks and snow geese are hunted along the Bylot Island coast. Seasonal camps are located south of Wollaston Island, in Tay Bay, and south of Canada Point. Walrus hunting occurs in summer during haul-out at locations such as Wollaston Island, while seal hunting can occur in the Navy Board coastal area of Bylot Island.

Na 83 During late June and early July, a large proportion of the Lancaster Sound narwhals move westward along the north coast of Borden Peninsula and return eastward in September (29, 35).

Na 84, 101 From mid- to late July, large numbers of narwhals move into Navy Board Inlet through shore leads along the Borden Peninsula (35, 41). During September, large numbers of narwhals occur in northern Navy Board Inlet along both coasts, but especially around the Wollaston Islands (35, 41).

Na 102, Bh 102 The north and east coasts of Bylot Island are a major migration route for narwhals and bowheads during their spring (May-July) and fall (September) migrations (31, 35, 41).

Bh 83 In September, a large proportion of the Lancaster Sound bowheads migrates east close to the Baffin Island coast (35, 41).

HS 101 During September, harp seals occur in northern Navy Board Inlet, particularly in the vicinity of the Wollaston Islands (35, 41).

HS 102 The north and east coasts of Bylot Island are a major migration route for harp seals during their spring (July) and fall (September) migrations (31, 35, 41).

Fu 83 In late June and again in mid- to late September, thousands of fulmars occur briefly along this coast (36).

Fu 84 In late July, hundreds of fulmars occur briefly along this coast as the Admiralty Inlet ice edge recedes (36).

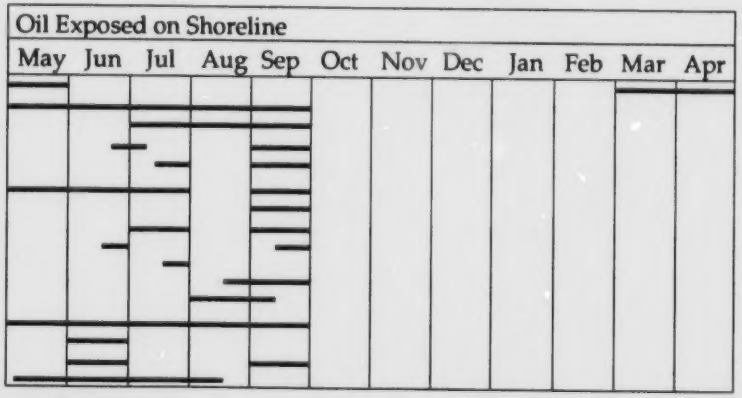
Gu 83, 84 From mid-August to late September, thousands of kittiwakes (43/km²) occur along the coast from Cape Joy to Navy Board Inlet (36).

Gu 100, 101 From early August to mid-September, flocks of hundreds of kittiwakes and many glaucous gulls occur between Canada Point and the Wollaston Islands (52).

AlGu 102 The largest thick-billed murre colony in the study area is located on coastal cliffs west of Cape Hay. The colony contains 280,000 murres, 40,000 kittiwakes, and 100 black guillemots (55). A smaller colony of 100-1000 pairs of kittiwakes nests on the Wollaston Islands (7). From early June to late September, thousands of kittiwakes (100 to 250/km²) frequent the area from the Wollaston Islands to Cape Hay. Up to 3000 birds have been noted in the bay which forms the terminus of the Cape Hay glacier (36, 50). A small colony of 50+ glaucous gulls nests 20 km west of Cape Hay (52).

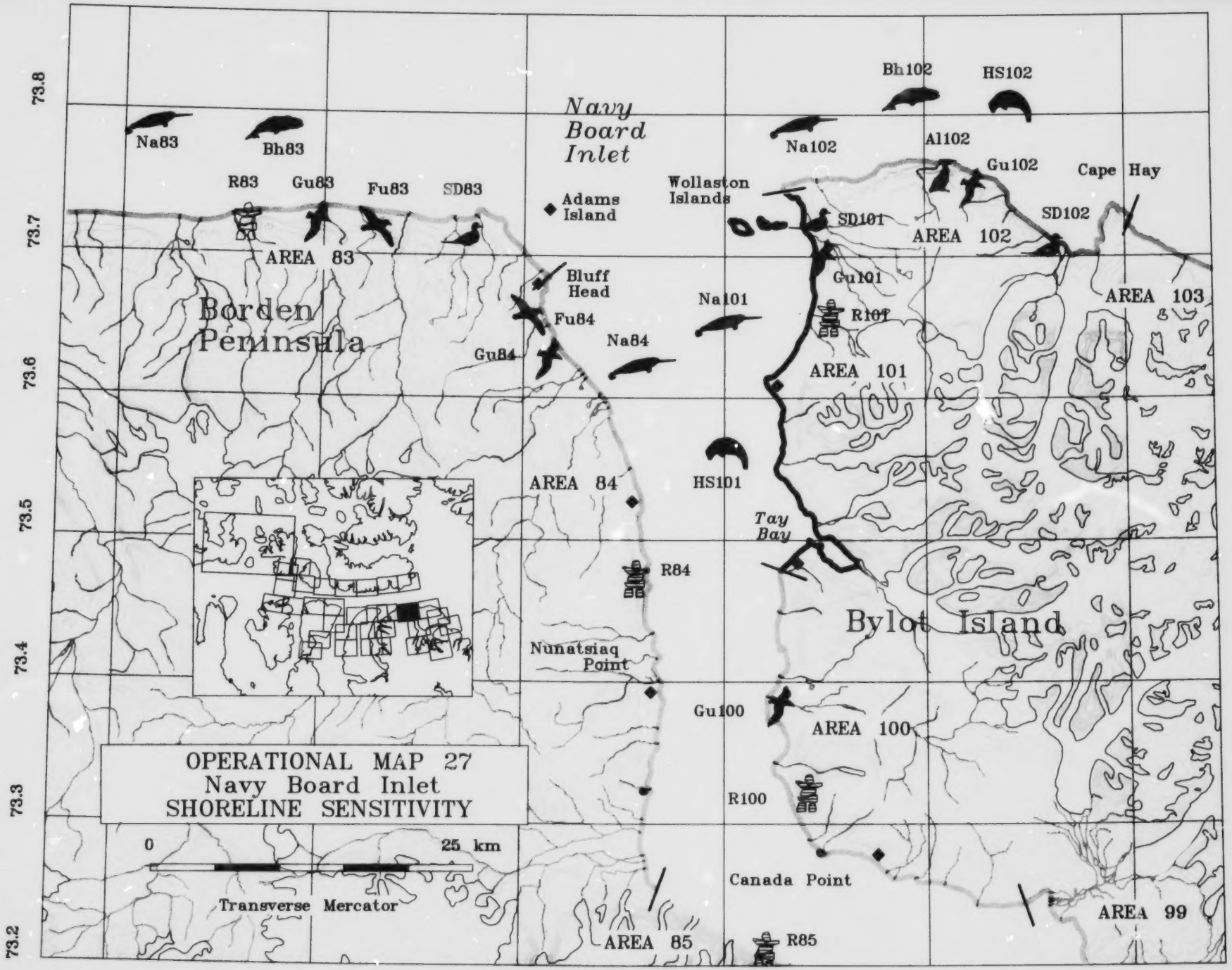
SD 83, 101 In June, thousands of oldsquaws are at the ice edge near Adams Island and north of Wollaston Islands (36). In September, thousands of oldsquaws and eiders occur along the coast to Tay Bay.

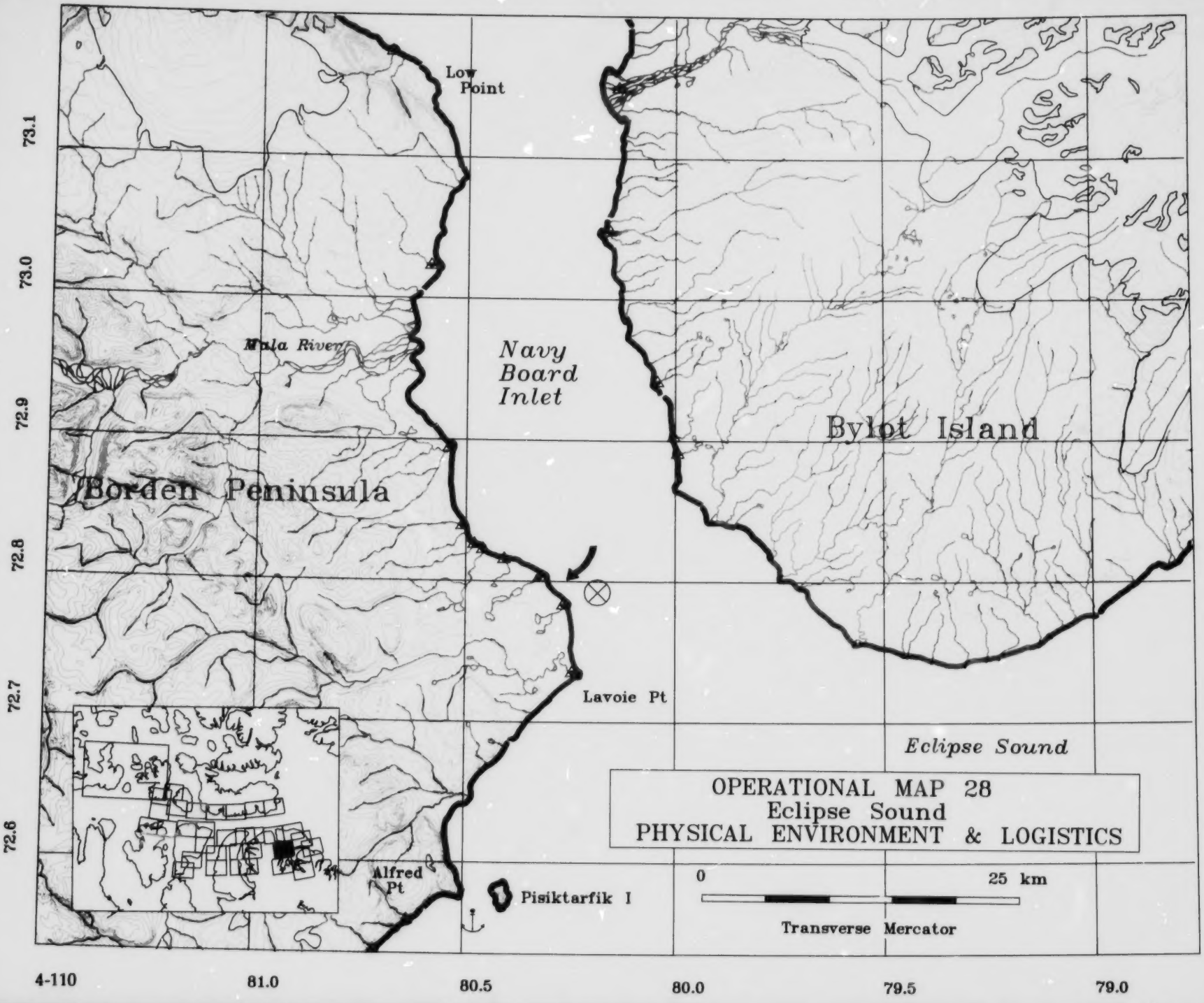
SD 102 From early May until mid-August, thousands of eiders and some flocks of oldsquaws occur along the northeast coast of Bylot Island (50, 52).



Occurrence of Species and Resource Use

- R 83
- R 84, 85
- R 100, 101
- Na 83
- Na 84, 101
- Na 102, Bh 102
- Bh 83, HS 101
- HS 102
- Fu 83
- Fu 84
- Gu 83, 84
- Gu 100, 101
- AlGu 102
- SD 83
- SD 101
- SD 102


Navy
Board
Inlet
Borden
Peninsula
Bylot Island
Tay
Bay
Adams
Island
Wollaston
Islands
Bluff
Head
Nunatsiaq
Point
Canada Point
Cape Hay
AREA 83
AREA 84
AREA 85
AREA 99
AREA 100
AREA 101
AREA 102
AREA 103
Na83
Bh83
R83
Gu83
Fu83
SD83
Fu84
Gu84
Na84
R84
HS101
Na101
R101
SD101
Gu101
Na102
Bh102
HS102
Al102
Gu102
SD102
Gu100
R100
R85
OPERATIONAL MAP 27
Navy Board Inlet
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
73.8
73.7
73.6
73.5
73.4
73.3
73.2
82.5
82.0
81.5
81.0
80.5
80.0


Low Point
Mala River
Navy Board Inlet
Bylot Island
Borden Peninsula
Lavoie Pt
Eclipse Sound
Alfred Pt
Pisiktarfik I
OPERATIONAL MAP 28
Eclipse Sound
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
73.1
73.0
72.9
72.8
72.7
72.6
4-110
81.0
80.5
80.0
79.5
79.0

Operational Map 28 - *Eclipse Sound*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 26, Map 29
Topographic Map - 38B, 48A, 48D
Hydrographic Chart - 7212, 7220
Video Tapes (reference number) - none

ACCESS

There is deep water through Navy Board Inlet with some shoaling at river and stream outfalls. In particular, shoal depths of less than 1 m are found up to 4 km off the Mala River delta, and shoal water extends northward for about 15 km. Several rock islets and shoal hazards in the westernmost portion of Eclipse Sound are noted on hydrographic charts. An anchorage is also noted between Alfred Point and Pisiktarfik Island in about 40 m.

A weak transient current is reported to set southward through Navy Board Inlet, turning to eastward as it enters Eclipse Sound. The west end of Eclipse Sound is generally the last part of this area to be free of ice. Once the general break-up occurs, wind and currents drive the remaining ice back and forth in western Eclipse Sound and in and out of the entrance to Milne Inlet until it finally melts.

Although no specific locations are identified, shore access may be possible on the low beaches north of Lavoie Point.

COUNTERMEASURES

Considerable local knowledge exists about the waters and shorelines in this area and this knowledge should be accessed when planning countermeasures.

All efforts should be made to prevent oil from moving south of this map area. Southward (Map 30) the coastline is much more intricate and will demand more difficult and extensive cleanup efforts.

In ice concentrations of 6 tenths or greater in offshore and nearshore waters, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended. Dispersant application may be justified in offshore and nearshore waters in order to protect waterfowl.

In order to limit the extent of contamination, diversion booming techniques could be employed at the southern entrance to Navy Board Inlet to divert oil to raised beaches on either side. Diversion booming techniques could also be used to protect river and stream outfalls, directing oil to adjacent less sensitive shores.

Sites for the temporary storage and/or incineration of collected oily material may be possible on the shoreline north of Lavoie Point. Care should be taken not to disturb the number of hunting camps and archaeological sites in this area.

SAFE HAVENS

No potential safe havens for vessel lightering and/or stabilization operations were identified in this map area. The closest candidate site is the cove on the southwest shore of Ragged Island (Map 29) entered approximately 30 km south of Lavoie Point.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 28 - *Eclipse Sound*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
85	Eastern Borden Peninsula	86.10
86	Low Point	115.60
87	Lavoie Point	106.90
88	Tremblay Sound	103.60
98	Southwest Bylot Island	104.20
99	Dufour Point	109.00

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Narwhal Na
- Bowhead Bh
- Char Ch
- Gull Gu
- Goose Ge
- Sea Duck SD

Environmental Description

R 85-88, 98-99 These areas lie within the proposed North Baffin/Lancaster Sound National Park (16). A number of archaeological sites are found along the coast of Areas 86, 87 and 88.

R 86 Traditional, seasonal hunting camps are located in Areas 85 and 86. During late spring and summer, walrus, and narwhal are hunted adjacent to outpost camps in Eclipse Sound and Navy Board Inlet. Seals are also hunted in the coastal area near the camps in Navy Board Inlet. Domestic fishing for Arctic char occurs north and south of Low Point in the summer, and ducks and geese are hunted nearshore during the open water season.

R 87 Pond Inlet residents live at the outpost camp, Quanaq, during the summer season. A traditional, seasonal camp is located at Lavoie Point. The area is extensively used during spring, summer, and fall for hunting seals, narwhal, and ducks. Domestic fishing is conducted at the delta of the Mala River, north of Lavoie Point, and adjacent to Quanaq (14). The entire coastline is used for Arctic char fishing (56). Major seal and narwhal hunting occurs in the Quanaq area in the spring and summer open water season.

R 98 Seals and narwhal are harvested in the coastal regions during the spring and open water season. Numerous camps are located on the coast of Bylot Island in Eclipse Sound, opposite the community of Pond Inlet. Area 98 is valued by the residents of Pond Inlet for naturalist sightseeing and recreation.

R 99 During the open water season, ducks and snow geese are hunted along the Bylot Island coast. Seasonal camps are located south of Canada Point. Walrus hunting is conducted in summer during haul-out, while seal hunting can occur in the Navy Board coastal area of Bylot Island.

Na 85, 86 During mid- to late July, large numbers of narwhals move into Navy Board Inlet through shore leads along the Borden Peninsula (35, 41).

Na 87 Eclipse Sound is a major summering ground for narwhals during July and August (26, 41, 47, 64).

Bh 87 During July and August, a significant number of bowheads inhabit Eclipse Sound (12).

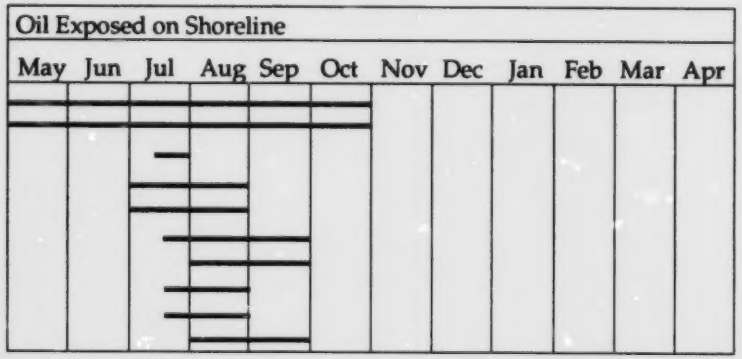
Ch 86-88 During the open water season, anadromous Arctic char are known to feed and migrate through the Mala River and Alpha River areas (46).

Gu 98, 99 In August and September, large numbers of glaucous gulls and smaller numbers of Arctic terns frequent the south coast of Bylot Island (52).

Ge 86 From mid-July until late August, the Mala River delta is an important moulting area for hundreds of greater snow geese (37).

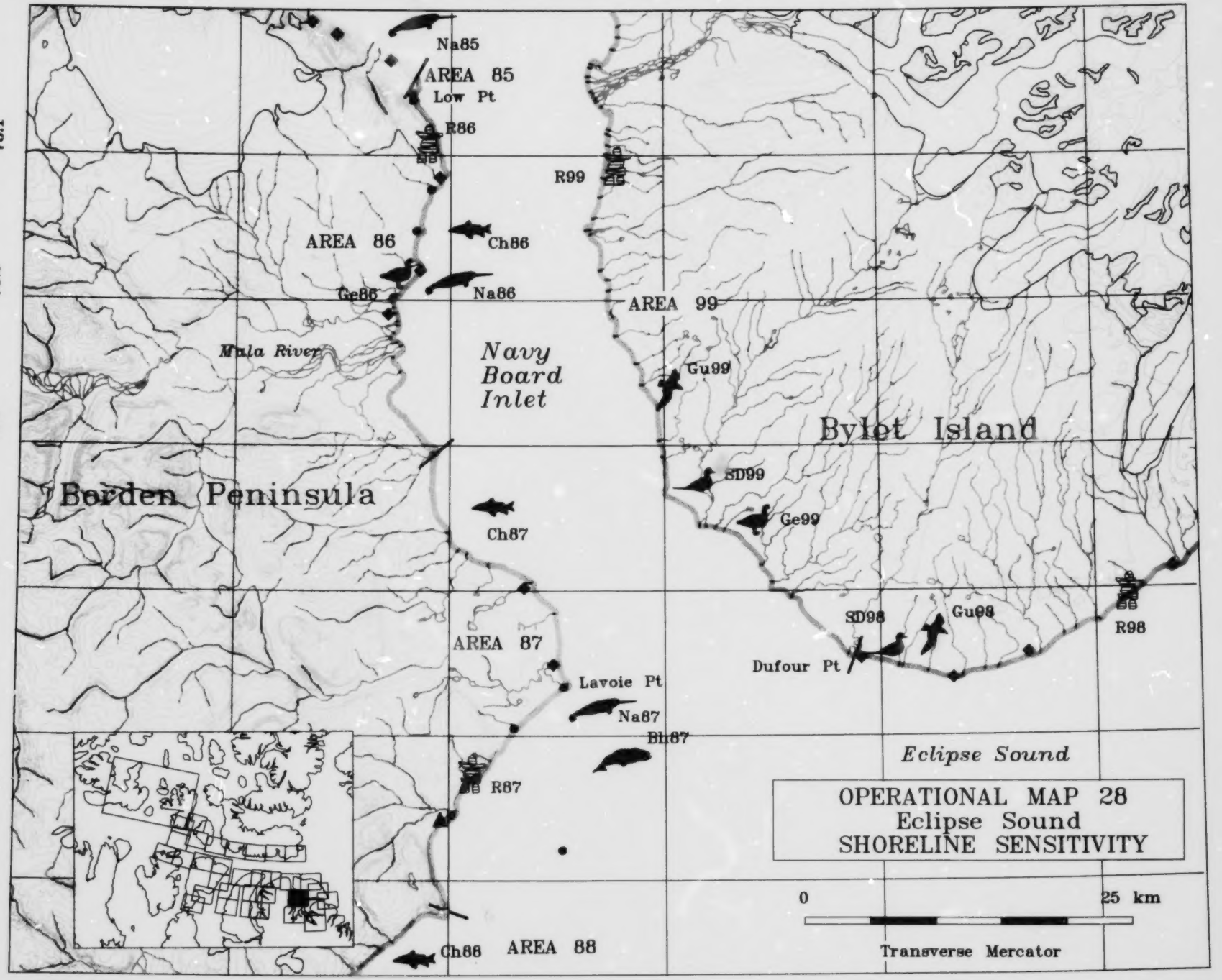
Ge 99 From mid-July until late August, many hundreds of greater snow geese gather in large flocks along the southwest coast of Bylot Island (52).

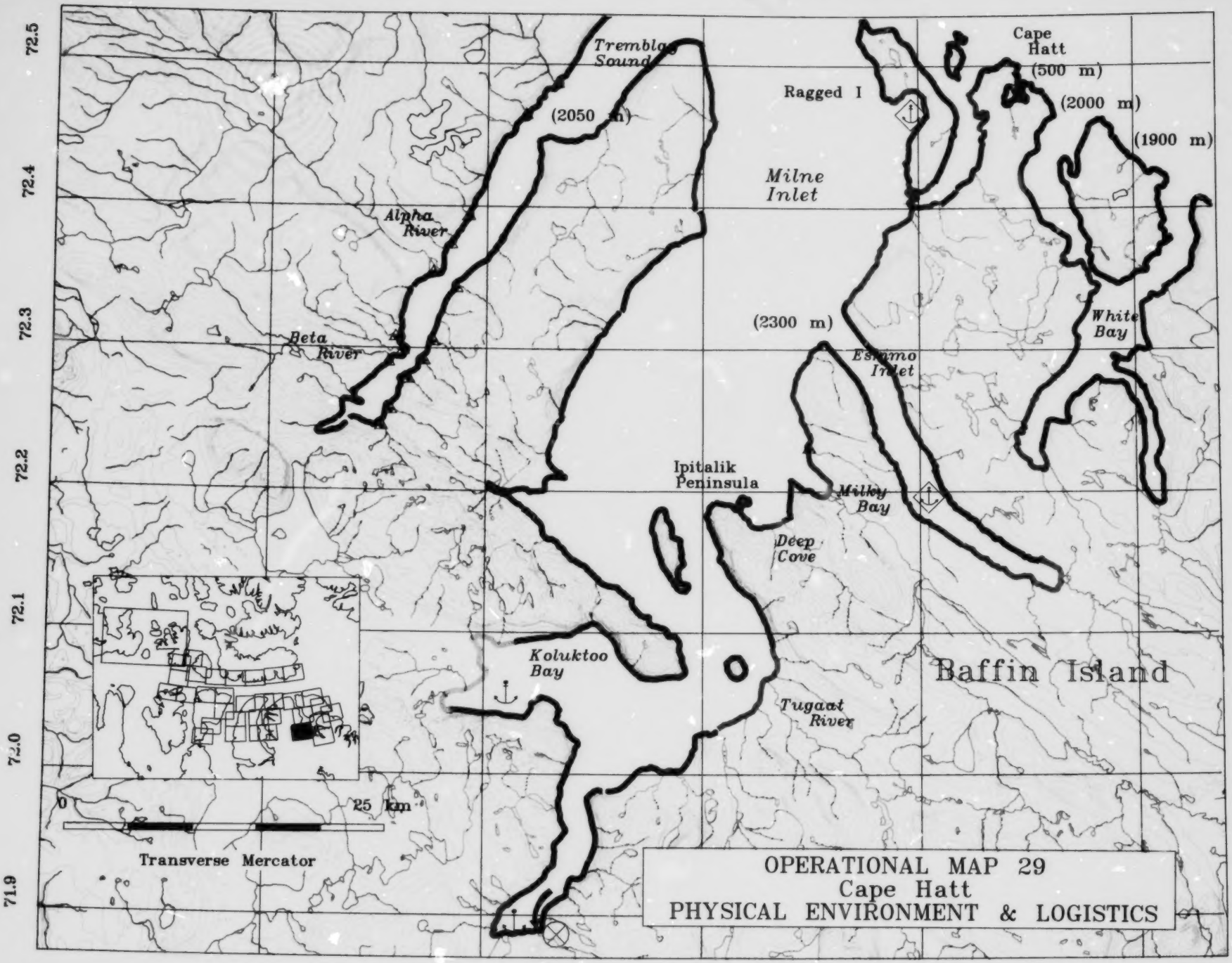
SD 98, 99 During August and September, thousands of oldsquaw occur along the southeast coast of Bylot Island (52).



Occurrence of Species and Resource Use

- R 86, 98, 99
- R 87
- Na 85, 86
- Na 87
- Bh 87
- Ch 86-88
- Gu 98, 99
- Ge 86
- Ge 99
- SD 98, 99


Na85
AREA 85
Low Pt
R86
R99
AREA 86
Ch86
Ge86
Na86
AREA 99
Mala River
Navy
Board
Inlet
Gu99
Bylot Island
Borden Peninsula
SD99
Ge99
Ch87
R98
SD98
Gu98
AREA 87
Dufour Pt
Lavoie Pt
Na87
Bl87
Eclipse Sound
R87
OPERATIONAL MAP 28
Eclipse Sound
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Ch88
AREA 88
73.1
73.0
72.9
72.8
72.7
72.6
81.5
81.0
80.5
80.0
79.5
79.0


Tremblay Sound
(2050 m)
Ragged I
Cape Hatt
(500 m)
(2000 m)
(1900 m)
Milne Inlet
Alpha River
Beta River
(2300 m)
White Bay
Esrromo Inlet
Ipitalik Peninsula
Milky Bay
Deep Cove
Koluktoo Bay
Baffin Island
Tugaat River
0
25 km
Transverse Mercator
OPERATIONAL MAP 29
Cape Hatt
PHYSICAL ENVIRONMENT & LOGISTICS
72.5
72.4
72.3
72.2
72.1
72.0
71.9
4-114
81.5
81.0
80.5
80.0
79.5

Operational Map 29 - *Cape Hatt*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 29
Topographic Map - 38B, 48A
Hydrographic Chart - 7212, 7220
Video Tapes (reference number) - none

ACCESS

The waters in and around Milne Inlet are fairly well charted; anchorages are noted in Koluktoo Bay in 49 m with excellent shelter; at the head of Milne Inlet in 55 m; and in a cove on the southwest shore of Ragged Island in about 50 m.

The west end of Eclipse Sound is generally the last part of this area to be free of ice. Once the general break-up occurs, wind and currents drive the remaining ice back and forth in western Eclipse Sound and in and out of the entrance to Milne Inlet until the ice finally melts.

A 550 m x 15 m abandoned gravel airstrip is located at Magda Lake, approximately 40 km northwest of the head of Tremblay Sound. Topographic maps indicate an abandoned airstrip at the head of Milne Inlet, where there is also a landing beach and abandoned campsite of the Baffinland Iron Mine Co. Both these airstrips are outside the map boundaries. Light aircraft have landed on the delta and drying flats in the northwest corner of Koluktoo Bay.

The tidal variation is reported as 1.7 m mean, 2.3 m large at the entrance to Milne Inlet, and 1.4 m mean, 2.7 m large at its head. Tidal currents are not reported but could be significant and affect countermeasures operations.

In Tremblay Sound, the cliff shoreline is fronted in several places by a narrow beach and foreshore that may allow shore operations.

COUNTERMEASURES

Considerable local knowledge exists about the waters and shorelines in this area and this knowledge should be accessed when planning countermeasures.

All efforts should be made to prevent oil from entering the numerous sounds and inlets in this area in order to minimize subsequent cleanup requirements.
In-situ burning of oil in conjunction with tracking oiled ice is recommended in offshore and nearshore waters in ice concentrations of 6 tenths or greater. Containment for recovery or burning is recommended in open water conditions. Containment operations may be complicated by tidal currents in certain areas. Dispersant application may be justified where conditions allow, but should be used with caution in these protected waters due to their importance to narwhal, bowhead, and char populations.

Several of the following inlets could be sealed using exclusion booming techniques depending on tidal currents in order to limit the extent of inshore contamination: Tremblay Sound (2050 m), Eskimo Inlet (2300 m), the bay close south of Cape Hatt (500 m), and the channels flanking Curry Island (2000 m, 1900 m). Oil entering Milne Inlet could be diverted to talus and cliff shorelines inside its entrance depending on prevailing currents.

Sites for the temporary storage and/or incineration of oily material may be possible on the northwest shore of Tremblay Sound and at the landing beach at the head of Milne Inlet. Shoreline operations throughout this area should take care not to disturb the many archaeological sites and seasonal camps.

SAFE HAVENS

Potential safe havens for vessel lightering and/or stabilization operations are the cove on the southwest shore of Ragged Island (with about 2200 m of boom to contain any escaping oil) and near the head of Eskimo Inlet. However, these sites are within an area identified as being of high sensitivity and expert consultation or sensitivity trade-offs would be required at the time of an incident to confirm site suitability.

Operational Map 29 - *Cape Hatt*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
88	Tremblay Sound	103.60
89	Milne Inlet	108.80
90	Cape Hatt	78.60

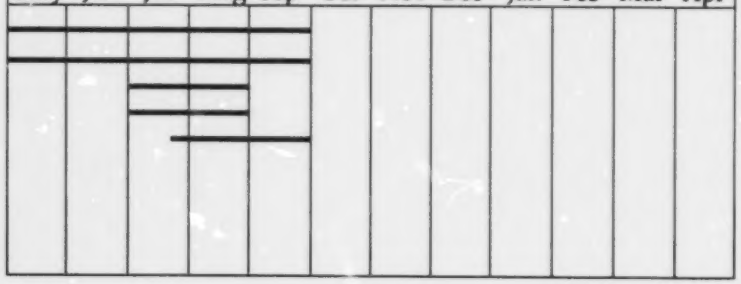
- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Char Ch
- Narwhal Na
- Bowhead Bh

Environmental Description

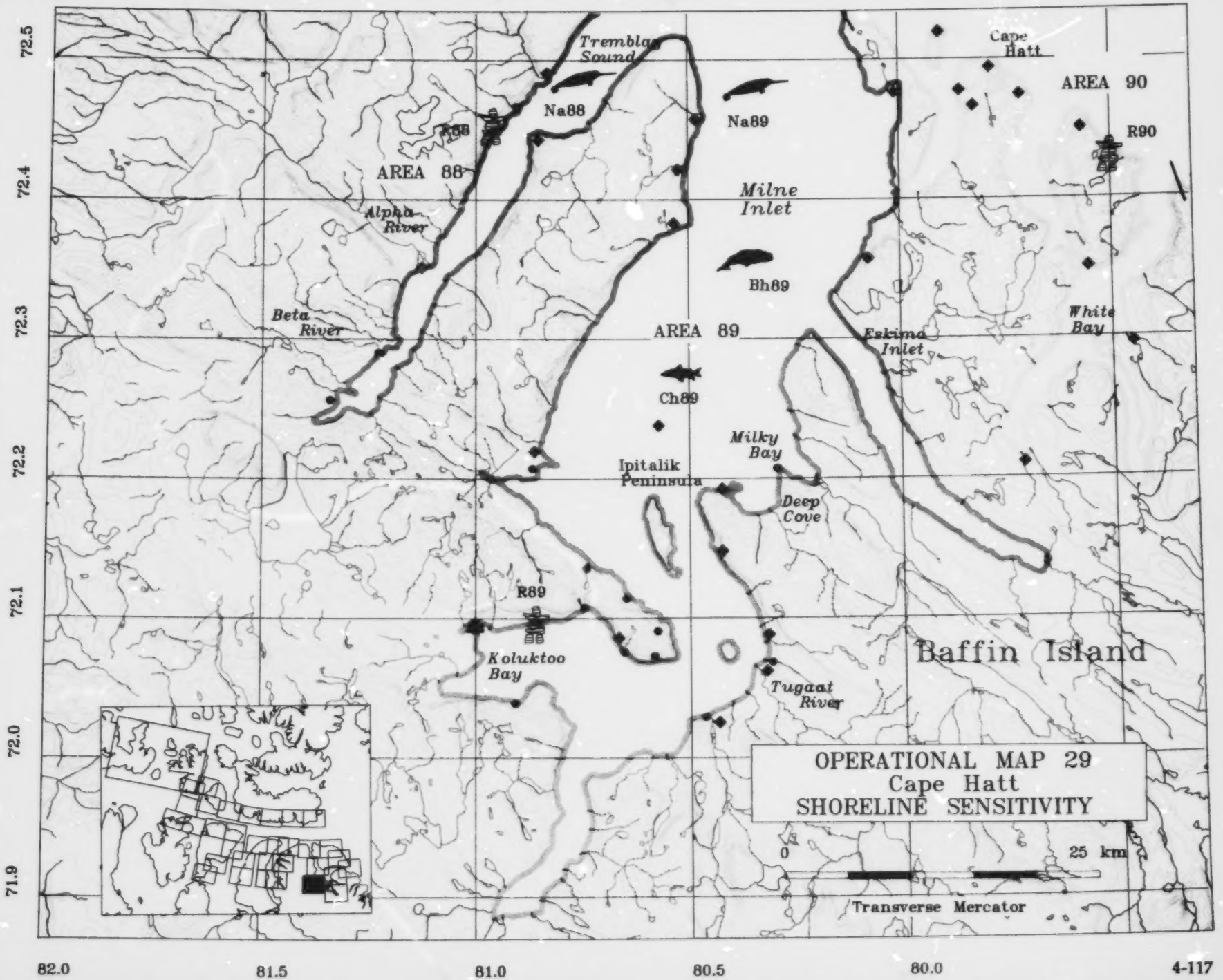
R 88-90 A number of archaeological sites and the proposed National Park are located within Areas 88 to 90.
R 88, 89 Milne Inlet and Tremblay Sound are important hunting areas for Pond Inlet residents. The area is primarily hunted in the spring and summer for seal, narwhal, ducks, and caribou. Domestic and sport fishing for char occurs in the open water season. A year-round outpost camp has been located at Ipitalik Peninsula but is now abandoned to summer use only. This area is noted for narwhal hunting during the summer open water season. Arctic char are domestically harvested between the Alpha and Beta Rivers in Tremblay Sound, Tugaat River, Deep Cove, Milky Bay, and Eskimo Inlet. Goose hunting occurs at the Tugaat River and Ipitalik Peninsula (14). Caribou are hunted extensively in the spring and summer in Tremblay Sound and in Milne Inlet south to Koluktoo Bay (56).
R 90 Numerous seasonal camps are also located on islands and headlands in Area 90. Between July and September, domestic fishing for Arctic char occurs in Tay Sound and adjacent to Emmerson and Curry Islands. Pond Inlet residents hunt caribou west of Tay Sound, towards White Bay, and Eskimo Inlet. Seals are harvested in Eclipse Bay and geese in Tay Sound during spring, summer, and fall. The Hunters' & Trappers' Association maintains buildings south of Cape Hatt.
Na 88, 89 Eclipse Sound, Milne Inlet, Tremblay Sound, and Koluktoo Bay are a major summering ground for narwhals during July and August (26, 41, 47, 64).
Bh 89 During July and August, a significant number of bowheads inhabit Eclipse Sound and Milne Inlet (12).
Ch 89 The Tugaat River area provides an important summer feeding habitat for anadromous Arctic char. Arctic char in the vicinity of Robertson River support a high-profile sport fishery (46, 67).

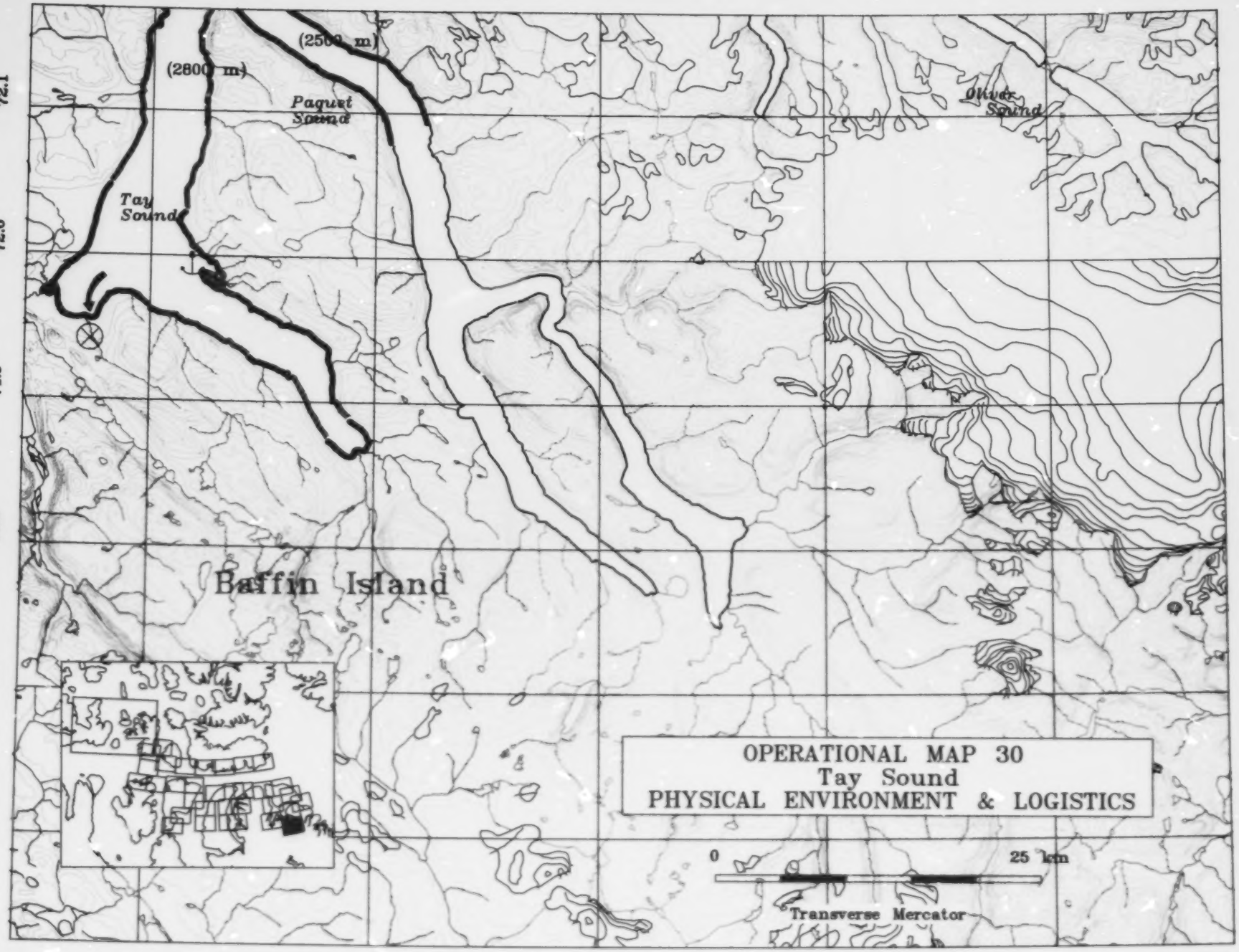
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

R 88, 89
R 90
Na 88, 89
Bh 89
Ch 89


72.5
72.4
72.3
72.2
72.1
72.0
71.9
Tremblay Sound
Cape Hatt
AREA 90
R90
Na88
Na89
R88
AREA 88
Milne Inlet
Alpha River
Bh89
Beta River
AREA 89
White Bay
Eskimo Inlet
Ch89
Milky Bay
Ipitalik Peninsula
Deep Cove
R89
Koluktoo Bay
Baffin Island
Tugaat River
OPERATIONAL MAP 29
Cape Hatt
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
82.0
81.5
81.0
80.5
80.0


(2800 m)
(2500 m)
Paquet Sound
Oliver Sound
Tay Sound
Baffin Island
OPERATIONAL MAP 30
Tay Sound
PHYSICAL ENVIRONMENT & LOGISTICS
0
25 km
Transverse Mercator
72.1
72.0
71.9
71.8
71.7
71.6
79.0
78.5
78.0
77.5
77.0

Operational Map 30 - *Tay Sound*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 31
Topographic Map - 37G, 38B
Hydrographic Chart - 7212
Video Tapes (reference number) - 03

ACCESS

The waters of Tay Sound and Paquet Bay are protected from ice drifting in from Eclipse Sound and are reported to be ice-free through the navigation season of early August to mid-October. Tidal information is not reported, but tidal variation could be expected to be in the range of 1.5 to 2.5 m.

Anchorage is available in Tay Sound in 30 to 40 m (clay) with fair shelter. The bay 9 km west of this anchorage has a beach on its south shore that can be approached closely and affords good landing.

COUNTERMEASURES

Considerable local knowledge exists about the waters and shorelines in this area and this knowledge should be accessed when planning countermeasures.

All efforts should be made to prevent oil from moving into Tay Sound and Paquet Bay in order to minimize subsequent cleanup requirements.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in offshore and nearshore waters in ice concentrations of 6 tenths or greater. Containment for recovery or burning is recommended in open water conditions. Containment operations may be complicated by tidal currents in certain areas. Dispersant application may be justified where conditions allow, but should be used with caution in these protected waters due to their importance as char feeding areas.

In order to limit the extent of inshore contamination exclusion booming techniques could be used to protect Tay Sound (2800 m) and Paquet Bay (2500 m) depending on tidal currents. Alternatively, approaching oil could be diverted onto shorelines near the entrances.

Temporary storage and incineration of collected oily material may be possible at the landing beach in Tay Sound. Any shoreline operations in the area must take care not to disturb the many archaeological sites and seasonal camps within this area.

SAFE HAVENS

The anchorage in Tay Sound is the only candidate as a safe haven for vessel lightering and/or stabilization operations; however, the potential for containing any escaping oil is clearly limited by the breadth of the sound at this location.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Note that there is no coastal mapping information available for Paquet Sound.

Operational Map 30 - *Tay Sound*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
91	Tay Sound	98.40
92	Oliver Sound	94.90

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Highly Important R

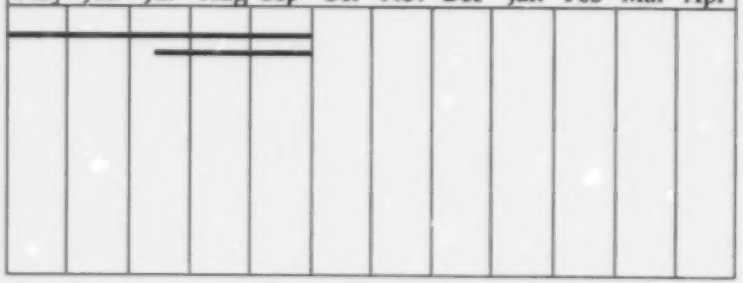
Char Ch

Environmental Description

R 91 A number of archaeological sites and the proposed National Park are in Area 91. Numerous seasonal camps are also located on islands and headlands in Area 91. Between July and September, domestic fishing for Arctic char occurs in Tay Sound and adjacent to Emmerson and Curry Islands. Pond Inlet residents hunt caribou west of Tay Sound, towards White Bay, and Eskimo Inlet. Seals are harvested in Eclipse Bay and geese in Tay Sound during spring, summer, and fall.

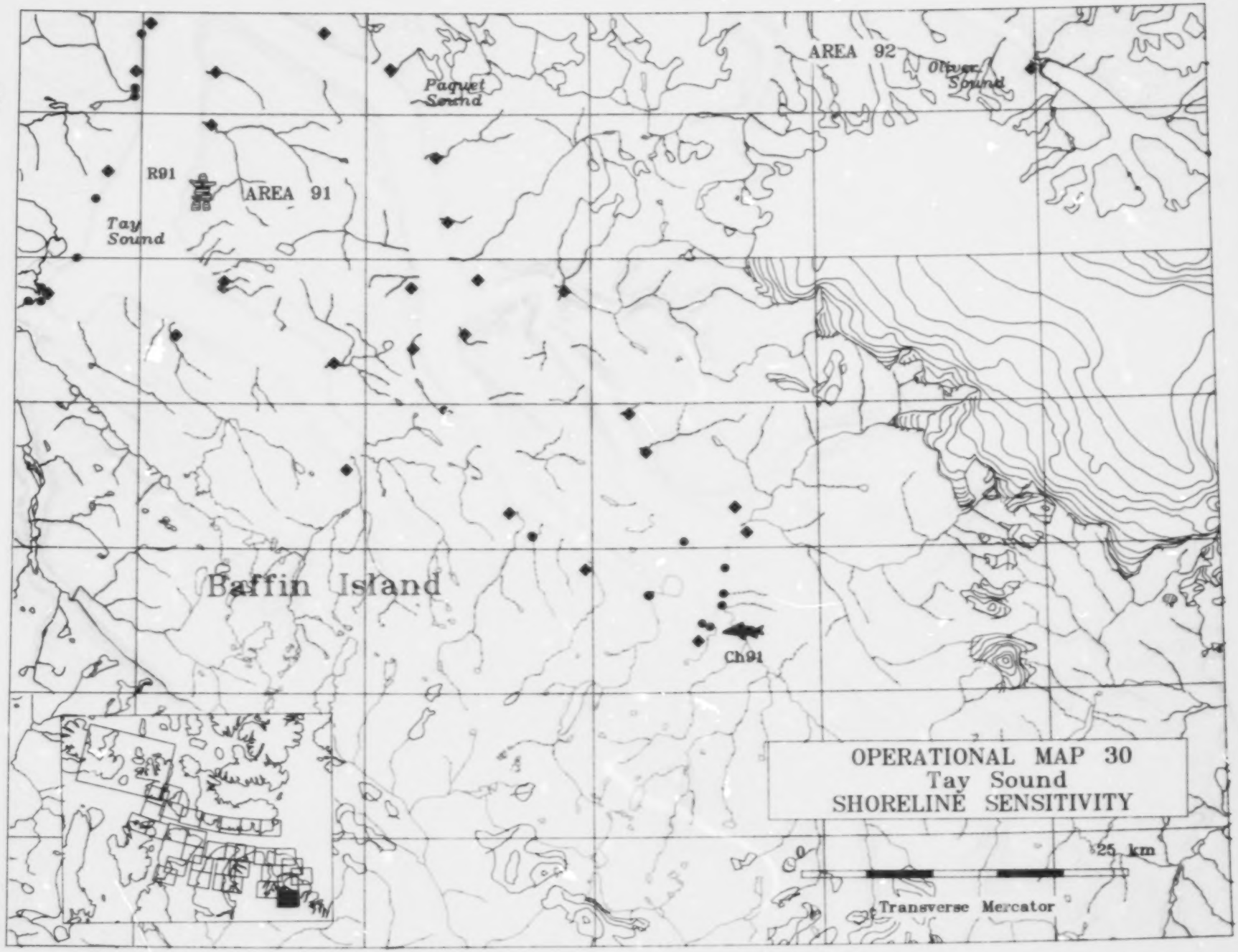
Ch 91 Anadromous Arctic char are known to feed within and migrate through Tay Sound and Paquet Bay during the open water season (46).

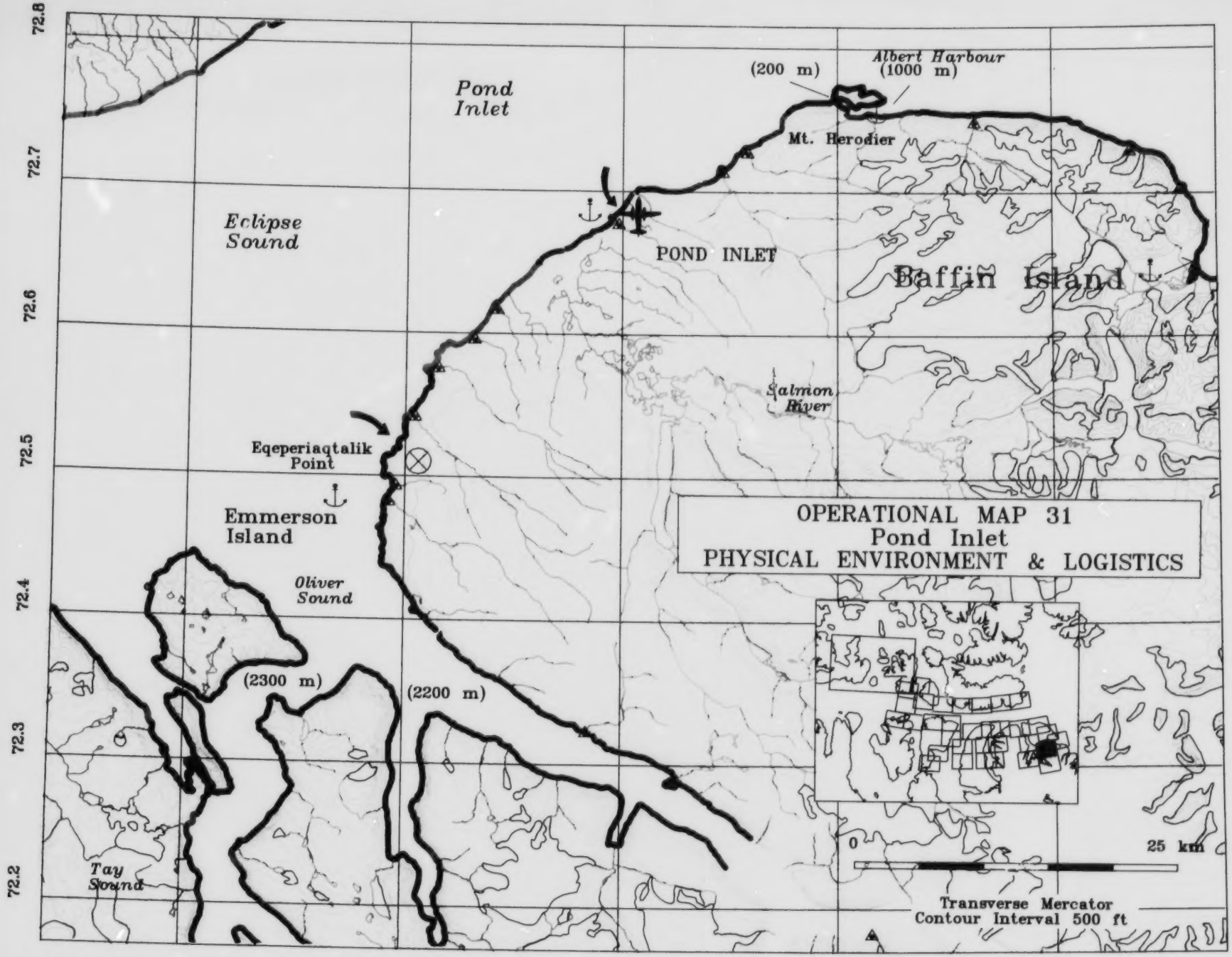
Oil Exposed on Shoreline



Occurrence of Species and Resource Use

R 91
Ch 91


AREA 92
Oliver Sound
Paquet Sound
R91
AREA 91
Tay Sound
Baffin Island
Ch91
OPERATIONAL MAP 30
Tay Sound
SHORELINE SENSITIVITY
25 km
Transverse Mercator
72.1
72.0
71.9
71.8
71.7
71.6
79.0
78.5
78.0
77.5
77.0


72.8
72.7
72.6
72.5
72.4
72.3
72.2
Pond Inlet
Albert Harbour
(1000 m)
(200 m)
Mt. Herodier
Eclipse Sound
POND INLET
Baffin Island
Salmon River
Eqeperiaqtalik Point
Emmerson Island
OPERATIONAL MAP 31
Pond Inlet
PHYSICAL ENVIRONMENT & LOGISTICS
Oliver Sound
(2300 m)
(2200 m)
Tay Sound
0
25 km
Transverse Mercator
Contour Interval 500 ft
4-122
79.0
78.5
78.0
77.5
77.0

Operational Map 31 - *Pond Inlet*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 31
Topographic Map - 38B
Hydrographic Chart - 7212, 7220
Video Tapes (reference number) - 03

ACCESS

The entrance to Tay Sound is well charted; deep water is indicated throughout. Oliver Sound is not charted, but is reported to have deep water except near its head. Tidal variations are not reported but should be in the range of 1.5 to 2.5 m.

Good anchorage is reported off Eqeperiaqtalik Point in 57 m (clay). Nearshore depths are not charted, but marine access may be possible along the hummocky shore in this area.

A 1220 m x 30 m year-round gravel airstrip serves the hamlet of Pond Inlet. Anchorage off the townsite is available in 18 to 46 m. The reported tidal range is 0.89 to 2.1 m, the tidal stream flooding to westward and ebbing eastward at speeds up to 100 cm/s. The anchorage is exposed to weather as well as the threat of ice floes carried by the strong current.

Albert Harbour offers good anchorage in 37 m (mud), well sheltered from weather but no protection from incoming ice.

The eastern entrance and narrows of Pond Inlet are generally ice-free during the open water season and only rarely becoming choked with ice that drifts in on westerly winds. During winter, Pond Inlet and Eclipse Sound are covered with continuous shorefast ice that allows surface travel from December to May.

The shoreline shown in the northwest corner of this map area (Bylot Island) is described in Map 28.

COUNTERMEASURES

Considerable local knowledge exists about the waters and shorelines in this area and this knowledge should be accessed when planning countermeasures.

Efforts should be made to prevent oil from entering the sounds and inlets in the southwest portion of this area in order to minimize subsequent cleanup requirements.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in offshore and nearshore waters in ice concentrations of 6 tenths or greater. Containment for recovery or burning is recommended in open water conditions (conditional on winds carrying smoke away from Pond Inlet). Containment operations may be complicated by tidal currents in certain areas. Dispersant application, in order to protect waterfowl populations, may be justified where conditions allow their effective use.

In order to minimize the extent of inshore contamination, exclusion booming techniques could be used, depending on tidal conditions, to seal the entrance to Tay Sound (2300 m), the entrance to Stevenson Inlet (2200 m), and the western and eastern entrances to Albert Harbour (200 m, 1000 m).

The coastlines in this area are predominantly cliff, talus, and raised beach shores that are highly exposed and may not require active cleaning efforts if not heavily contaminated. The hummocky shores 30 km southwest of the hamlet of Pond Inlet may allow shore access as well as sites for the temporary storage and/or incineration of collected oily material. The high number of archaeological sites, seasonal camps, and local activity dictates that no shore-based operations be conducted without consulting local residents.

SAFE HAVENS

No potential safe havens for vessel lightering/stabilization operations were identified in this map area; the closest candidate site is Erik Harbour, entered 70 km east of the hamlet of Pond Inlet.

Operational Map 31 - *Pond Inlet*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
91	Tay Sound	94.80
92	Oliver Sound	94.90
93	Pond Inlet	132.60
94	Mt. Herodier	111.40
95	Erik Harbour	112.20
98	Southwest Bylot Island	104.20

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Greatest Importance R
- Highly Important R
- Narwhal Na
- Char Ch
- Fulmer Fu
- Gull Gu
- Sea Duck SD

Environmental Description

R 91-95, 98 There are 30 archaeological sites in Areas 91 and 95. There are two historic sites of interest to Economic Development and Tourism, G.N.W.T., at Salmon Creek and Albert Harbour and a National Historic Site of Interest to the Canadian Parks Service in Pond Inlet (16). All of these areas lie within the proposed North Baffin/ Lancaster Sound National Park.

R 91 Numerous seasonal camps are also located on islands and headlands in Area 91. Between July and September, domestic fishing for Arctic char occurs in Tay Sound and adjacent to Emmerson and Curry Islands. Pond Inlet residents hunt caribou west of Tay Sound, towards White Bay, and Eskimo Inlet. Seals are harvested in Eclipse Bay and geese in Tay Sound during spring, summer, and fall.

R 92 Seasonal camps dot the coastal area of Oliver Sound. The area is used extensively by Pond Inlet residents for seal, caribou, and bird hunting, as well as recreational camping.

R 93, 94 Numerous traditional, seasonal hunting and fishing camps and the community of Pond Inlet are located between Eqeperiaqtalik Point and Mt. Herodier. This area is used by Pond Inlet residents for hunting, fishing, and recreation. During spring and summer, domestic fishing occurs along the coastline, particularly near Pond Inlet. Open water hunting for seals is intense along this coastal stretch. Domestic fishing and hunting (geese) also occur in Guys Bight during spring and early summer. The area beyond Guys Bight is becoming more heavily used by Pond Inlet residents during the summer season. Polar bears are hunted towards the floe edge in the spring and are occasionally harvested in the shoreline area near Guys Bight. Polar bears may be hunted until May 31.

R 98 Seals and narwhal are harvested in the coastal regions during the spring and open water season. Numerous camps are located on the coast of Bylot Island in Eclipse Sound, opposite the community of Pond Inlet. Area 98 is valued by the residents of Pond Inlet for naturalist sightseeing and recreation.

Na 94 During early July, large numbers of narwhals move through shore leads in Pond Inlet toward their traditional summering grounds in Eclipse Sound (25, 26, 27, 64). Narwhals return eastward through Pond Inlet in late September and early October (41).

Ch 91-94 Anadromous Arctic char are known to feed within and migrate through Tay Sound and Paquet Bay during the open water season (46). They are also known to occur in the vicinity of Salmon River (Areas 92-94) and Erik Harbour.

Fu 93 From early August until mid-September, hundreds of fulmars frequent the coast east of the community of Pond Inlet (52).

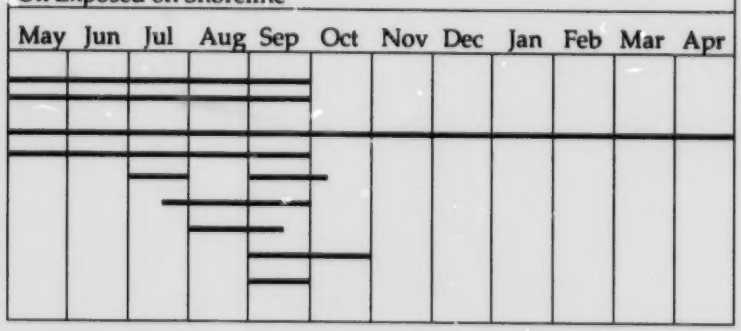
Fu 94 From early August until mid-September, hundreds of fulmars feed in the tide rips that occur off Mt. Herodier (22).

Gu 93 Ivory gulls are found around the community of Pond Inlet during September to late October (58).

Gu 93, 94 During September, large flocks of both kittiwakes and glaucous gulls utilize coastal areas east of the community of Pond Inlet to Guys Bight (52).

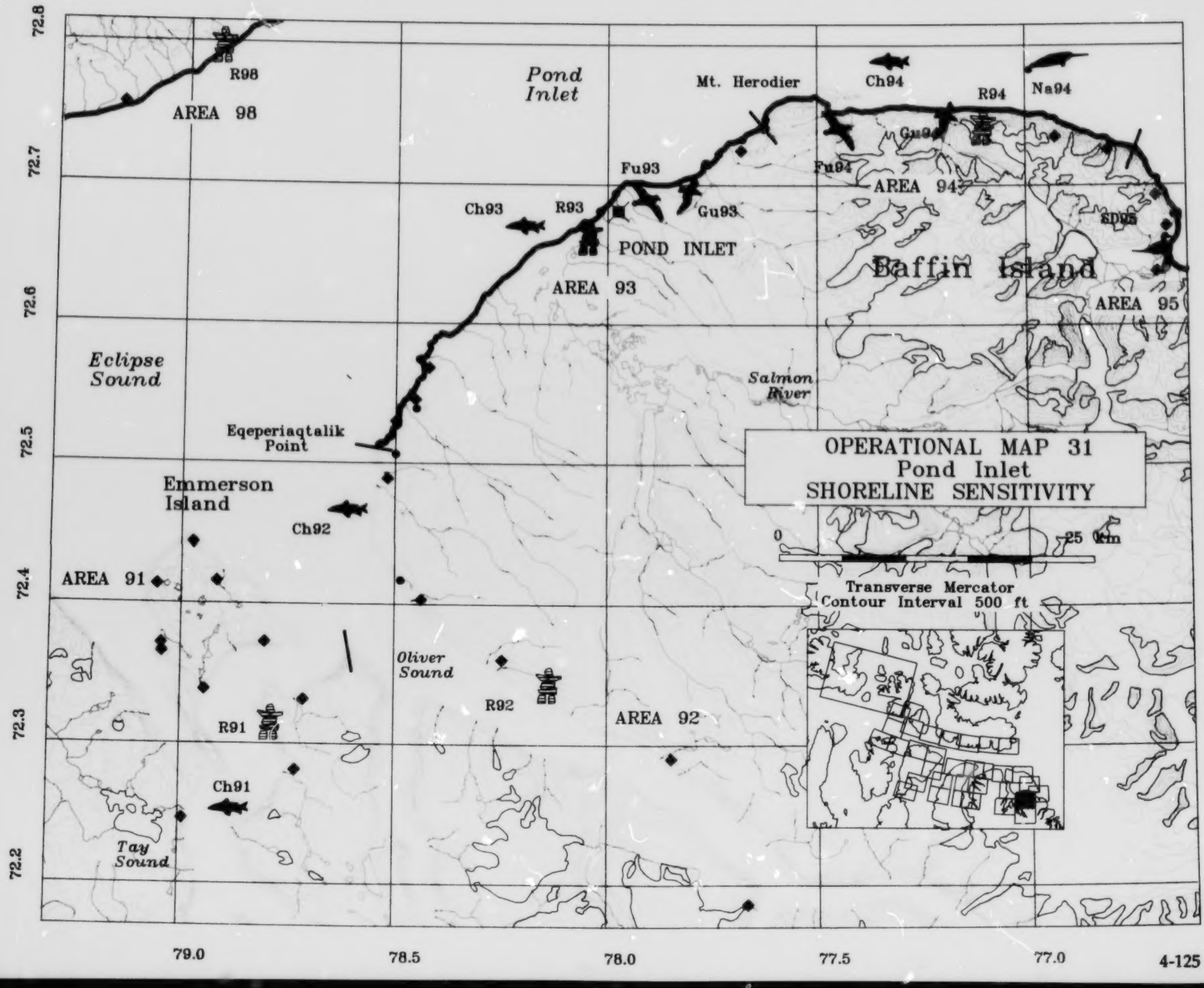
SD 95 During September, thousands of oldsquaws and some eiders occur in Guys Bight (36, 52).

Oil Exposed on Shoreline



Occurrence of Species and Resource Use

- R 91
- R 92
- R 93, 94
- R 98
- Na 94
- Ch 91-94
- Fu 93, 94
- Gu 93, 94
- SD 95


OPERATIONAL MAP 31
Pond Inlet
SHORELINE SENSITIVITY
0
25 Km
Transverse Mercator
Contour Interval 500 ft
Pond Inlet
Mt. Herodier
Baffin Island
POND INLET
Eclipse Sound
Salmon River
Eqeperiaqtalik Point
Emmerson Island
Oliver Sound
Tay Sound
AREA 98
AREA 94
AREA 93
AREA 95
AREA 91
AREA 92
R98
Ch94
R94
Na94
Gu94
Fu94
Fu93
Ch93
R93
Gu93
SD95
Ch92
R92
R91
Ch91
72.8
72.7
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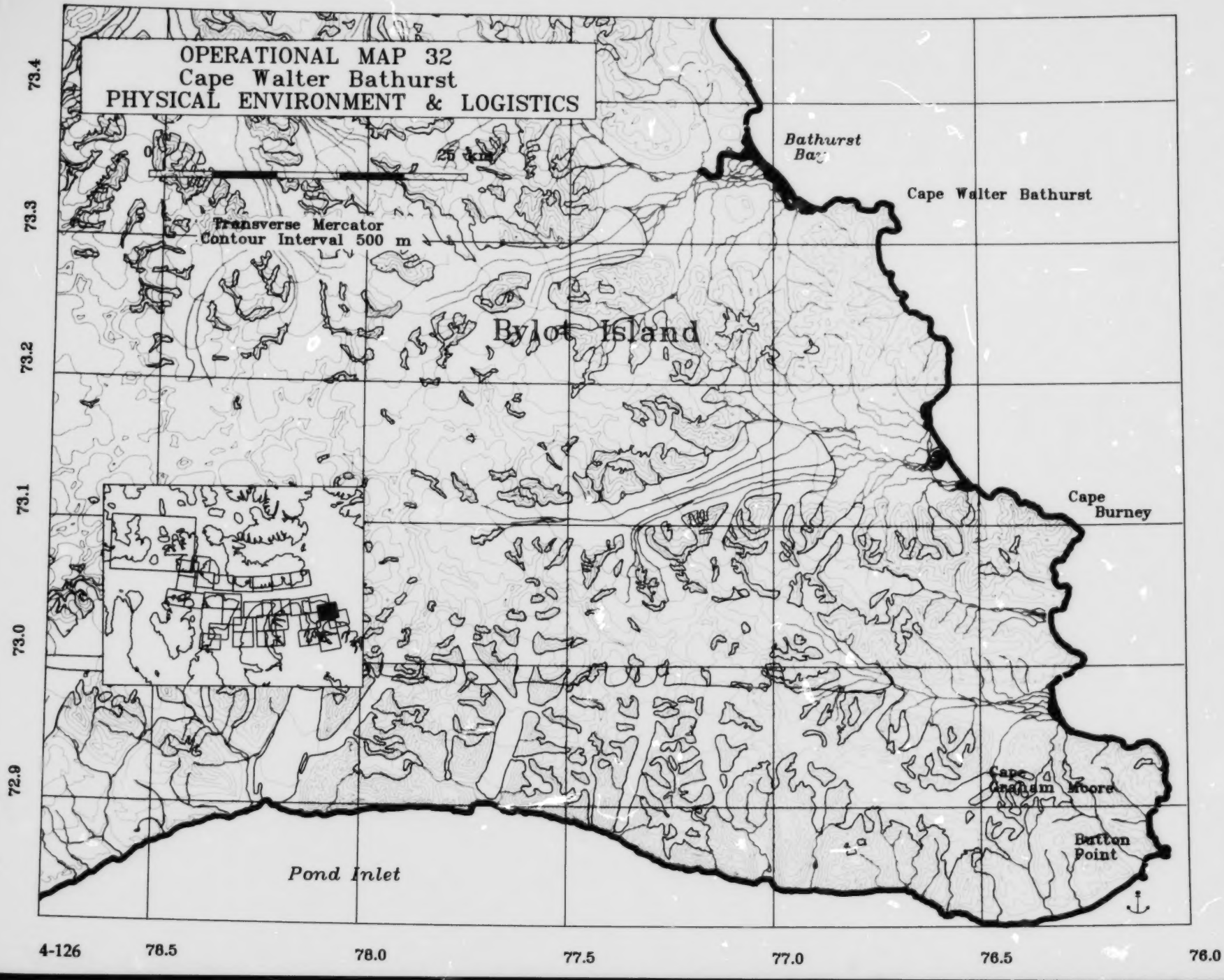
72.5
72.4
72.3
72.2
79.0
78.5
78.0
77.5
77.0


OPERATIONAL MAP 32
Cape Walter Bathurst
PHYSICAL ENVIRONMENT & LOGISTICS
25 km
Transverse Mercator
Contour Interval 500 m
Bylot Island
Bathurst Bay
Cape Walter Bathurst
Cape Burney
Cape Graham Moore
Button Point
Pond Inlet
73.4
73.3
73.2
73.1
73.0
72.9
78.5
78.0
77.5
77.0
76.5
76.0

Operational Map 32 - *Cape Walter Bathurst*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 31
Topographic Map - 38B, 38C
Hydrographic Chart - 7212, 7217, 7220
Video Tapes (reference number) - none

ACCESS

The south coast of Bylot Island is predominantly steep cliffs broken in several places by glacier outfalls. Good anchorage is reported in the small bay close west of Button Point, although it affords no protection from sea or ice in winds from southeast to southwest.

The nearshore waters off the east coast of Bylot Island are uncharted to a distance up to 10 km offshore. The 100 m depth contour ranges from about 7 km offshore Cape Burney to very close offshore Cape Byam Martin. Shoaling can be expected near the four major river outfalls indicated in this map. Currents offshore of the east coast of Bylot Island generally set to the southeast, but nearshore large current eddies occur. Tides rise from 1.8 to 2.4 m in this area.

COUNTERMEASURES

Considerable local knowledge exists about this area, particularly the waters and shoreline along Pond Inlet and Eclipse Sound, and this knowledge should be accessed when planning countermeasures.

In ice concentrations of 6 tenths or greater in offshore and nearshore waters, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions, containment for recovery or burning is recommended (burning operations are conditional on winds blowing away from Pond Inlet). Containment operations may be complicated, however, by strong and/or fluctuating surface water currents in some areas. Dispersant application may be justified in most portions of this map area in order to minimize impacts on surface resources.

The predominantly high-relief and highly exposed coastline in this area poses few requirements for shoreline protection techniques. The use of diversion booming techniques could be used near more sensitive river outfall areas to direct approaching oil to adjacent less sensitive shores.

SAFE HAVENS

No potential safe havens for vessel lightering/stabilization operations were identified in this map area; the closest candidate site is Erik Harbour, entered 30 km due south of Cape Graham Moore.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

Operational Map 32 - *Cape Walter Bathurst*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
96	Button Point	116.80
97	Southern Bylot Island	94.00
98	Sermilik Glacier	104.20
105	Cape Fanshawe	145.20
106	Cape Walter Bathurst	124.30
107	Cape Graham Moore	143.30

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

Highly Important R
Narwhal Na
Bowhead Bh
Harp Seal HS
Gull Colony Gu
Alcid Colony Al
Fulmer Fu
Gull Gu
Alcid Al
Sea Duck SD

Environmental Description

R 96-98 These areas lie within both the Bylot Island Migratory Bird Sanctuary and the proposed North Baffin/ Lancaster Sound National Park. A National Historic Site of Interest has been identified by the Canadian Parks Service at Button Point in Area 96 (16).

R 96-98 There is a traditional, seasonal hunting camp at Button Point. During spring, seals and polar bears are hunted extensively at the floe edge. This area, particularly Button Point and the floe edge, is used for recreational activity and is a tourist destination during spring and early summer.

R 97 From spring through fall, Pond Inlet residents hunt seals, narwhal, geese, and ducks and use this area for recreational purposes (56).

R 98 Seals and narwhal are harvested in the coastal regions during the spring and open water season. Numerous camps are located on the coast of Bylot Island in Eclipse Sound, opposite the community of Pond Inlet. Both Areas 97 and 98 are valued by the residents of Pond Inlet for naturalist sightseeing and recreation.

R 105-107 Residents of Pond Inlet hunt polar bears and seals along the coast and offshore at the floe edge during spring. Hunting for narwhal occurs primarily at the floe edge south of Cape Walter Bathurst, while walrus are harvested south of Cape Burney.

Na 97 During early July, large numbers of narwhals move through shore leads in Pond Inlet toward their traditional summering grounds in Eclipse Sound (25, 26, 27, 64). Narwhals return eastward through Pond Inlet in late September and early October (41).

Na 106, 107 The north and east coasts of Bylot Island are a major migration route for narwhals during their spring (May-July) and fall (September) migrations (31, 35, 41).

Bh 106, 107 The north and east coasts of Bylot Island are a major migration route for bowheads during their spring (May-July) and fall (September) migrations (31, 35, 41).

HS 105-107 The north and east coasts of Bylot Island are a major migration route for harp seals during their spring (July) and fall (September) migrations (31, 35, 41).

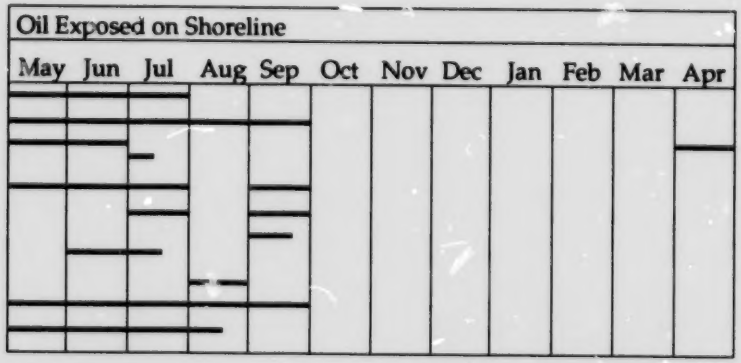
Fu 96 In early September, hundreds of fulmars occur briefly along this coast (50, 52).

Fu 105, 106 From early June to mid-July, thousands of fulmars occur along the fast ice edge (50, 52).

Gu 105 During August, flocks of 100+ terns occur along the coast of Bathurst Bay, the site of a nesting colony (50, 52).

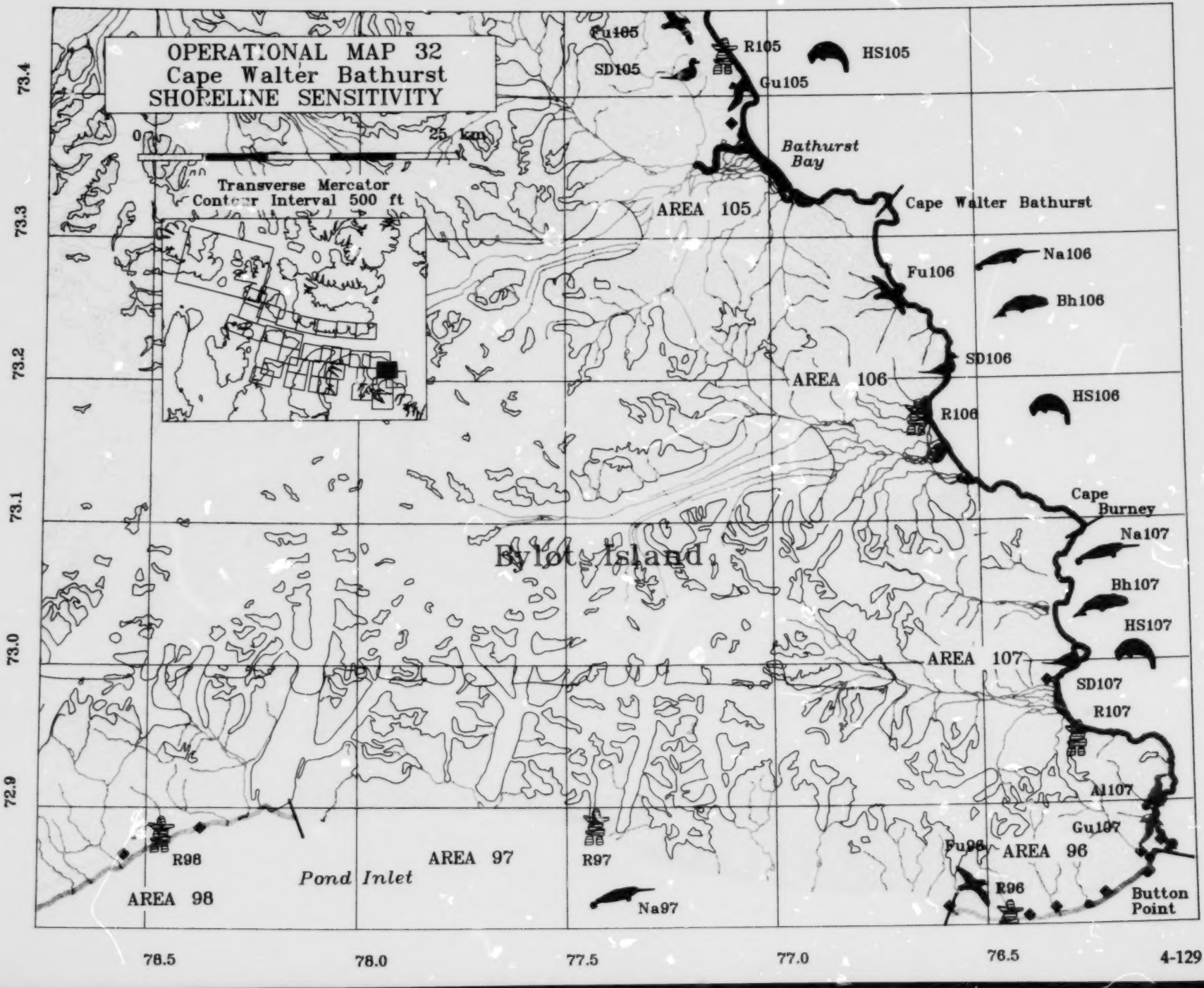
AlGu 107 About 50,000 thick-billed murres and 6,000 black-legged kittiwakes nest in a colony at Cape Graham Moore (55). Kittiwakes return to the colony in late May. From mid-May to early August, thousands of murres and kittiwakes frequent the fast ice edge along this coast (50, 52).

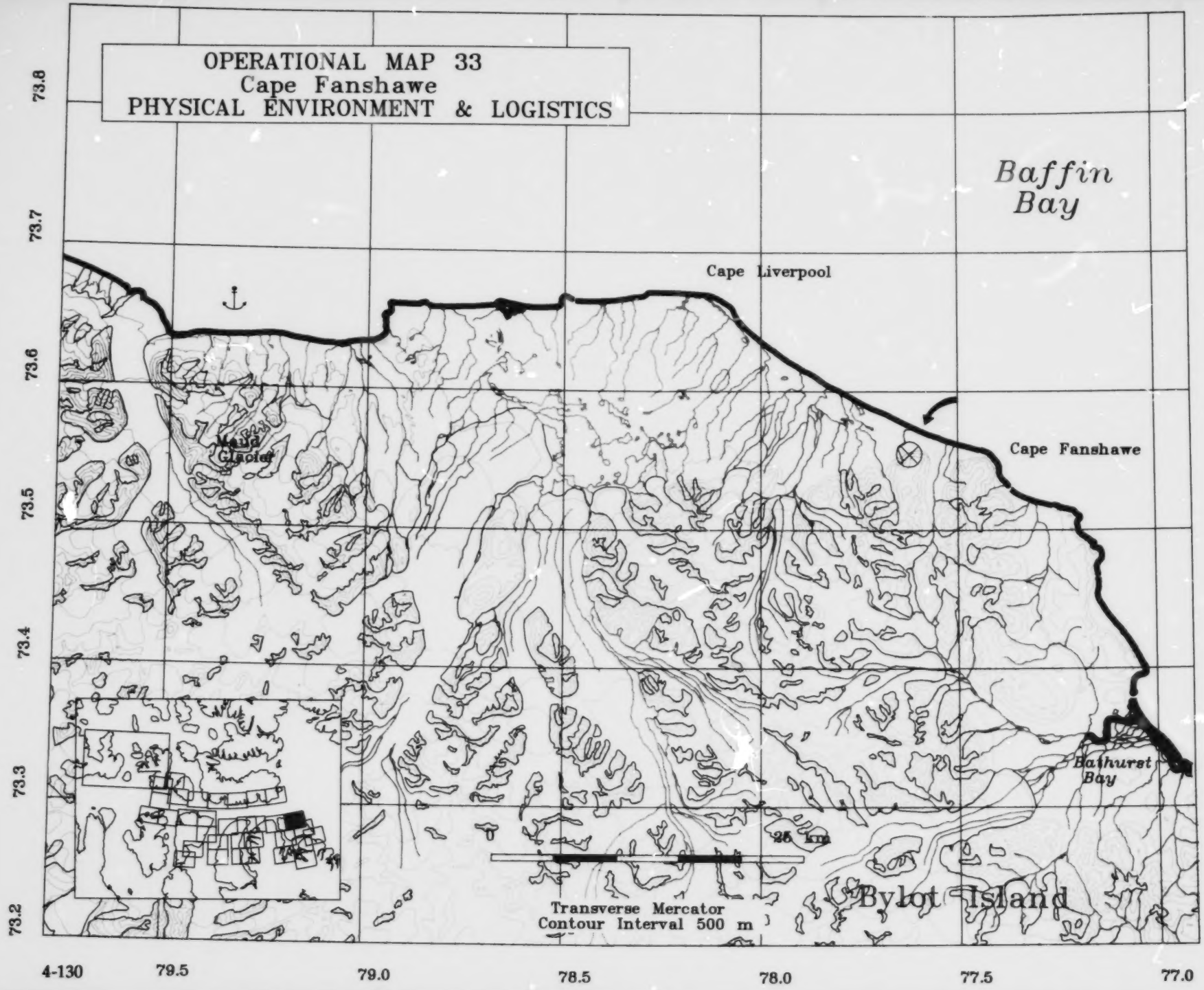
SD 105-107 From early May until mid-August, thousands of eiders and some oldsquaws occur along the southeast coast of Bylot Island (50, 52).



Occurrence of Species and Resource Use

- R 96-98
- R 97, 98
- R 105-107
- Na 97
- Na 106, 107, Bh 106, 107
- HS 105-107
- Fu 96
- Fu 105, 106
- Gu 105
- AlGu 107
- SD 105-107


OPERATIONAL MAP 32
Cape Walter Bathurst
SHORELINE SENSITIVITY
0
25 km
Transverse Mercator
Contour Interval 500 ft
Gu105
SD105
R105
HS105
Gu105
Bathurst Bay
AREA 105
Cape Walter Bathurst
Na106
Fu106
Bh106
SD106
AREA 106
HS106
R106
Cape Burney
Na107
Bh107
HS107
AREA 107
SD107
R107
Al107
Gu107
Fu96
AREA 96
R96
Button Point
Byløt Island
R98
AREA 97
R97
Pond Inlet
AREA 98
Na97
73.4
73.3
73.2
73.1
73.0
72.9
78.5
78.0
77.5
77.0
76.5


OPERATIONAL MAP 33
Cape Fanshawe
PHYSICAL ENVIRONMENT & LOGISTICS
Baffin Bay
Cape Liverpool
Cape Fanshawe
Maud Glacier
Bathurst Bay
25 km
Transverse Mercator
Contour Interval 500 m
Bylot Island
73.8
73.7
73.6
73.5
73.4
73.3
73.2
79.5
79.0
78.5
78.0
77.5
77.0

Operational Map 33 - *Cape Fanshawe*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 1, Map 31
Topographic Map - 38C
Hydrographic Chart - 7212, 7220
Video Tapes (reference number) - none

ACCESS

Between Cape Fanshawe and Cape Liverpool, the coast is low with a continuous beach cut by a number of glacier-fed streams. Charted depths show the 10 m depth contour within 200 m of shore generally and within 50 m of shore at several locations. Tides are reported to rise 1.8 to 2.4 m in this area.

Westward, anchorage is available in 12.8 m off Maud Bight. The shoreline here is fronted by a beach.

A fairly strong nearshore current sets to eastward across the north coast of Bylot Island. Further offshore the waters are characterized by weak, random currents. Along the northeast coast of Bylot Island, the current structure, influenced by the strong nearshore current from the west and the large-scale current eddies from the southeast, may vary.

COUNTERMEASURES

Considerable local knowledge exists about this area and this knowledge should be accessed when planning countermeasures.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. In open water conditions, containment for recovery or burning is recommended. Containment operations may be complicated by strong and/or fluctuating surface water currents in this area. Dispersant application may be justified in most portions of the map area in order to minimize impacts on waterfowl and other surface resources.

The predominantly high-relief and highly exposed coastline in this area poses few requirements for shoreline protection techniques. The use of diversion booming techniques could be used near more sensitive river outfall areas to direct approaching oil to adjacent less sensitive shores. Marine access and shoreline sites for the temporary storage and/or incineration of collected oily material may be possible along the beach 17 km southeast of Cape Liverpool.

SAFE HAVENS

No potential safe havens for vessel lightering/stabilization operations were identified in this map area; the closest candidate site is Erik Harbour, entered 90 km south of Bathurst Bay.

Operational Map 33 - *Cape Fanshawe*

Legend

*Shoreline Sensitivity**

- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
103	Maud Glacier	115.90
104	Cape Liverpool	143.80
105	Cape Fanshawe	145.20

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp

- Highly Important R
- Narwhal Na
- Bowhead Bh
- Harp Seal HS
- Fulmer Fu
- Gull Gu
- Alcid Al
- Sea Duck SD

Environmental Description

R 103-105 Areas 103 to 105 lie within the Bylot Island Migratory Bird Sanctuary as well as the proposed North Baffin/Lancaster Sound National Park.

R 104, 105 Traditional, seasonal hunting camps are located at Cape Fanshawe, Cape Byam Martin, and north Bathurst Bay. During spring, residents of Pond Inlet hunt polar bears and seals along the coast and offshore at the floe edge.

Na 103-105 The north and east coasts of Bylot Island are a major migration route for narwhals during their spring (May-July) and fall (September) migrations (31, 35, 41).

Bh 103-105 The north and east coasts of Bylot Island are a major migration route for bowheads during their spring (May-July) and fall (September) migrations (31, 35, 41).

HS 103, 104 The north and east coasts of Bylot Island are a major migration route for harp seals during their spring (July) and fall (September) migrations (31, 35, 41).

Fu 104, 105 From early June to mid-July, thousands of fulmars occur along the fast ice edge (50, 52).

Gu 103 In early September 1978, a flock of over 1500 kittiwakes was recorded at the Maud glacier front (52).

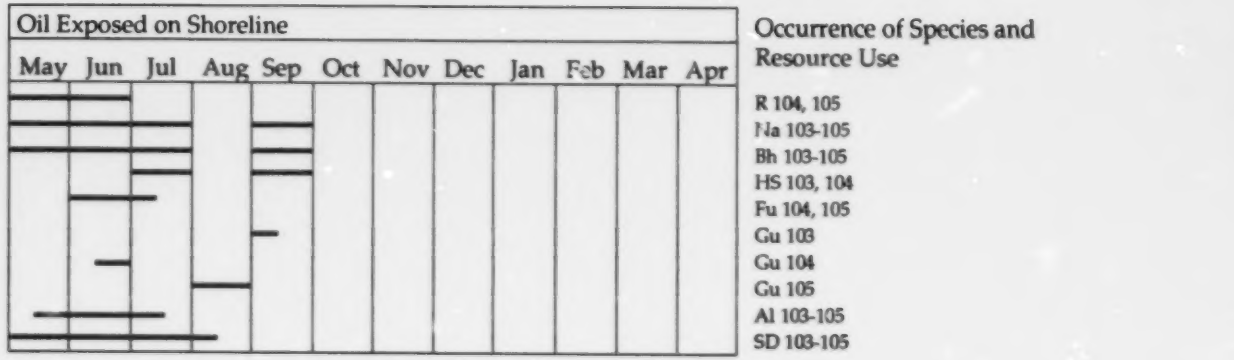
Gu 104 In late June 1978 and 1979, many thousands (~50/km^2) of kittiwakes concentrated along the fast ice in this area (52).

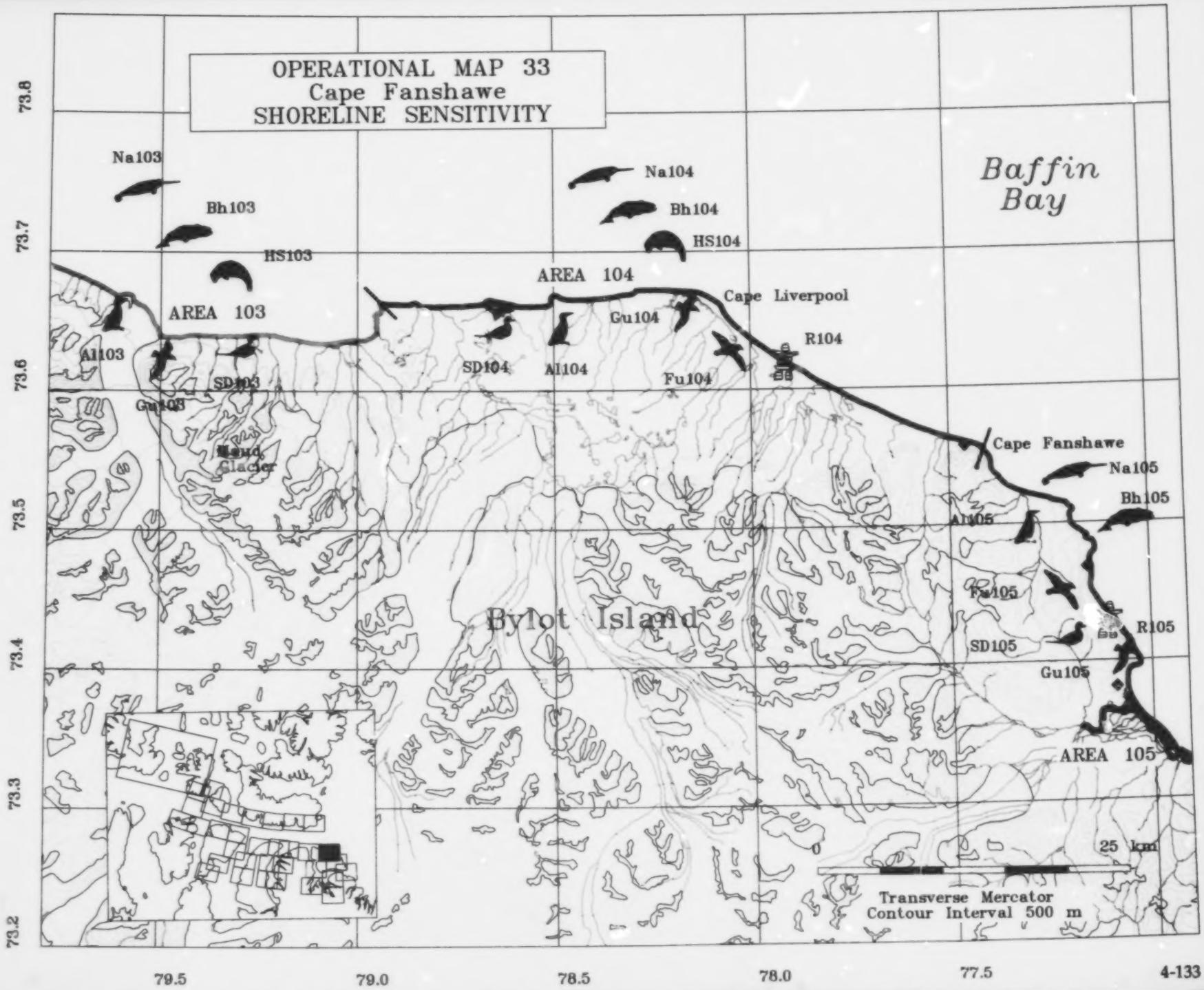
Gu 105 During August, flocks of 100+ terns occur along the coast of Bathurst Bay, the site of a nesting colony (50, 52).

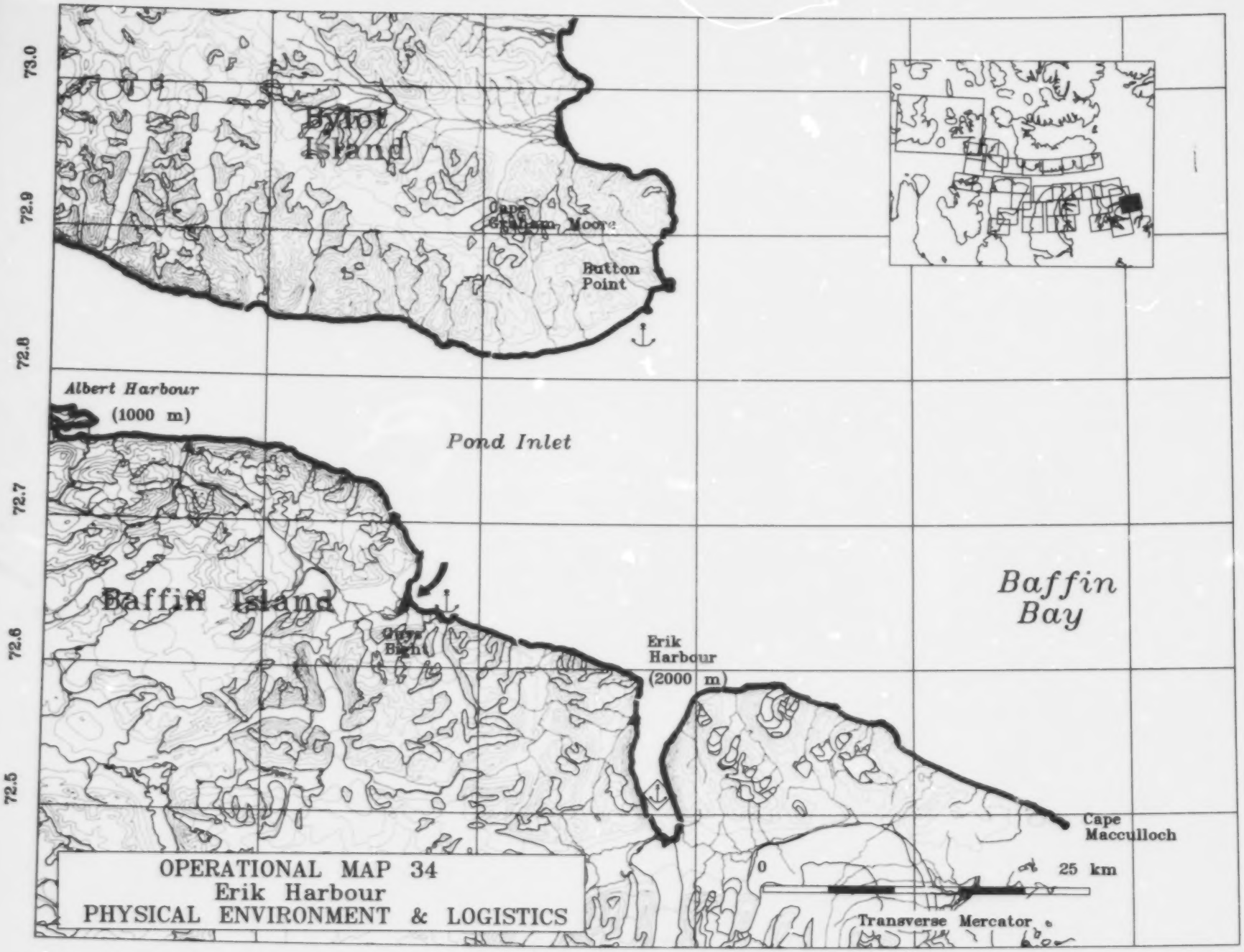
Al 103-105 From mid-May to mid-July, thousands of murres utilize the coast from Cape Hay to Cape Byam Martin (50, 52).

SD 103, 104 From early May until mid-August, thousands of eiders and some flocks of oldsquaws occur along the northeast coast of Bylot Island (50, 52).

SD 105 From early May until mid-August, thousands of eiders and some oldsquaws occur along the southeast coast of Bylot Island (50, 52).




OPERATIONAL MAP 33
Cape Fanshawe
SHORELINE SENSITIVITY
Baffin Bay
Na103
Bh103
HS103
Na104
Bh104
HS104
AREA 104
AREA 103
Cape Liverpool
Gu104
R104
Al103
SD103
Gu103
SD104
Al104
Fu104
Mould Glacier
Cape Fanshawe
Na105
Bh105
Al105
Fu105
Bylot Island
R105
SD105
Gu105
AREA 105
0
25 km
Transverse Mercator
Contour Interval 500 m
73.8
73.7
73.6
73.5
73.4
73.3
73.2
79.5
79.0
78.5
78.0
77.5


Bylot Island
Cape Graham Moore
Button Point
Albert Harbour
(1000 m)
Pond Inlet
Baffin Island
Baffin Bay
Erik Harbour
(2000 m)
Cape Macculloch
0
25 km
Transverse Mercator
OPERATIONAL MAP 34
Erik Harbour
PHYSICAL ENVIRONMENT & LOGISTICS
73.0
72.9
72.8
72.7
72.6
72.5
77.0
76.5
76.0
75.5
75.0

Operational Map 34 - *Erik Harbour*

Legend

- Estuary/Bay
- Barrier Beach & Lagoon
- Coastal Flat
- Raised Beach
- Platform Coast
- Dissected Plain
- Talus Coast
- Cliff Coast
- Glacier
- Delta
- Anchorage
- Potential Safe Haven
- Potential Shore Access
- Airstrip Suitable for STOL
- Airstrip Suitable for HS748/F27
- Airstrip Suitable for Hercules
- Ice Runways (Winter Only)
- ( ) Inlet Width for Booming (metres)
- Temporary Stockpile Location

Nearest Airstrip - Map 31
Topographic Map - 38A, 38B
Hydrographic Chart - 7212, 7217, 7220
Video Tapes (reference number) - 03

ACCESS

The eastern entrance to Pond Inlet is generally ice-free during the open water season, only rarely becoming choked with ice that drifts in on westerly winds. Anchorages are available in the following areas: Albert Harbour in 37 m (mud), well-sheltered from weather but not from incoming ice; Guys Bight in 12.8 to 14.6 m (mud and sand), exposed to winds from northwest to southeast; near Button Point,exposed to winds from southeast to southwest; and Erik Harbour in 14.6 to 18.3 m with good shelter, although the threat of icebergs which occasionally break off from the glacier may limit its use to short periods.

A transient current in the range of 15 to 35 cm/s is reported to run eastward along the northeast coast of Baffin Island. This current will fluctuate depending on tidal conditions as well as the influence of the Baffin Bay intrusion current from the north.

COUNTERMEASURES

Considerable local knowledge exists about the waters and shorelines in this area and this knowledge should be accessed when planning countermeasures.

In-situ burning of oil in conjunction with tracking oiled ice is recommended in ice concentrations of 6 tenths or greater in offshore and nearshore waters. In open water conditions, containment for recovery or burning is recommended. Containment operations may be complicated by fluctuating water currents in most parts of this area. Dispersant application may be justified where conditions allow their effective use, in order to protect waterfowl populations.

In order to minimize the extent of contamination, all efforts should be made to prevent oil from moving westward through Pond Inlet, which may occur during periods of strong westerly winds and/or on the flooding tide. Approaching oil could be diverted onto cliff and talus shores at the entrance to Pond Inlet depending on current conditions and the spill location. Exclusion booming techniques could be used to seal the entrances to Albert Harbour (1000 m) and Erik Harbour (2000 m).

Outside Pond Inlet, the highly exposed cliff and talus shorelines may not require active cleaning efforts if not heavily contaminated. The river valley at Guys Bight could be investigated for its potential use as a site for the temporary storage and/or incineration of collected oily material.

SAFE HAVENS

A potential safe haven for vessel lightering and/or stabilization operations is Erik Harbour. The harbour is well protected from weather and offers good opportunity to trap any escaping oil within a small area. However, it is reported that the threat of icebergs from the glacier at its head may make the harbour unsafe for an extended stay.

Note that some of the contour intervals are in feet and others in meters as the digital map files received from Energy, Mines and Resources Canada were made by merging two different map files. Both sets of contour intervals are mapped.

SHORELINE SENSITIVITY

Operational Map 34 - *Erik Harbour*

Legend

*Shoreline Sensitivity**

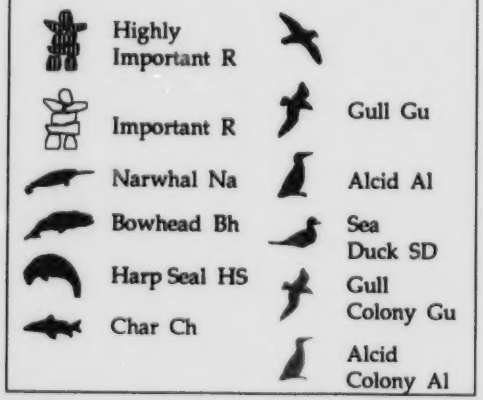
- Extreme Sensitivity Ranking > 120
- High Sensitivity Ranking 100-120
- Moderate Sensitivity Ranking 70-99.9
- Low Sensitivity Ranking < 70

* See Appendix A
See Regional Maps for Offshore Sensitivity

Area

No.	Name	Sensitivity Ranking
94	Mt. Herodier	111.40
95	Erik Harbour	112.20
96	Button Point	116.80
97	Southern Bylot Island	94.00
107	Cape Graham Moore	143.30
108	Cape Mcculloch	87.00

- Archaeological Site
- Seasonal Hunting Camp
- Outpost Camp
- Tourist Camp



Environmental Description

R 94, 95 During spring and summer, domestic fishing occurs along the coastline. Open water hunting for seals is intense along this coastal stretch. Domestic fishing and hunting (geese) also occur in Guys Bight during spring and early summer. The area beyond Guys Bight is becoming more heavily used by Pond Inlet residents during the summer. Polar bears are hunted towards the floe edge in the spring (until May 31) and are occasionally harvested in the shoreline area near Guys Bight.

R 96, 97 These areas lie within both the Bylot Island Migratory Bird Sanctuary and the proposed North Baffin/ Lancaster Sound National Park. There is a traditional, seasonal hunting camp at Button Point. During spring, seals and polar bears are hunted extensively at the floe edge. This area, particularly Button Point and the floe edge, is used for recreational activity and is a tourist destination during spring and early summer.

R 97 From spring through fall, Pond Inlet residents hunt seals, narwhal, geese, and ducks and use this area for recreational purposes (56).

R 107, 108 Residents of Pond Inlet hunt polar bears and seals along the coast and offshore at the floe edge during spring. Narwhal are hunted primarily at the floe edge south of Cape Walter Bathurst, while walrus are harvested south of Cape Burney. During late spring, the residents also hunt walrus and geese in the area north of Cape Macculloch.

Na 94-97 During early July, large numbers of narwhals move through shore leads in Pond Inlet toward their traditional summering grounds in Eclipse Sound (25, 26, 27, 64). Narwhals return eastward through Pond Inlet in late September and early October (41).

Bh 107 The north and east coasts of Bylot Island are a major migration route for bowheads during their spring (May-July) and fall (September) migrations (31, 35, 41).

HS 107 The north and east coasts of Bylot Island are a major migration route for harp seals during their spring (July) and fall (September) migrations (31, 35, 41).

Ch 94, 95 Anadromous Arctic char are known to occur in the vicinity of Salmon River (Areas 92-94) and Erik Harbour.

Fu 94 From early August until mid-September, hundreds of fulmars feed in the tide rips that occur off Mt. Herodier (22).

Fu 96 In early September, hundreds of fulmars occur briefly along this coast (50, 52).

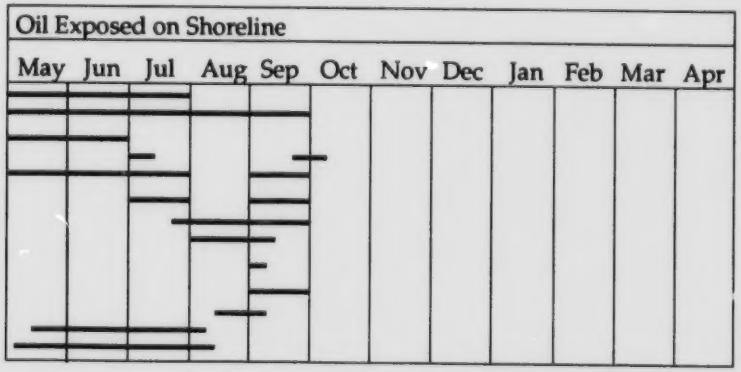
Gu 94, 95 During September, large flocks of both kittiwakes and glaucous gulls utilize coastal areas east of the community of Pond Inlet to Guys Bight (52).

Gu 96 From mid-August to early September, flocks of thousands of kittiwakes use the southeast coast of Bylot Island (52).

AlGu 107 About 40,000 thick-billed murres and 30,000 black-legged kittiwakes nest in a colony at Cape Graham Moore (51). Kittiwakes return to the colony in late May. From mid-May to early August, thousands of murres and kittiwakes frequent the fast ice edge along this coast (50, 52).

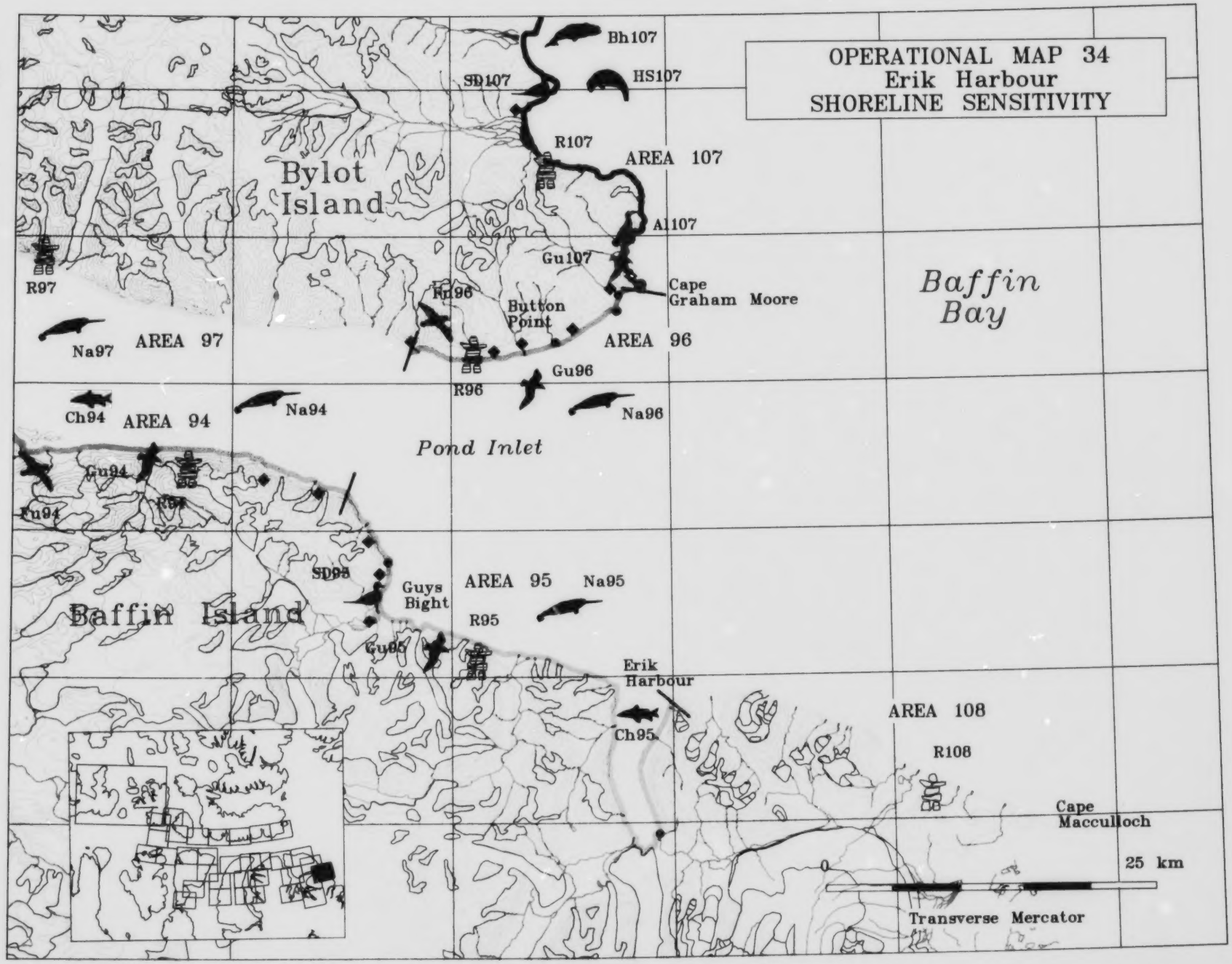
SD 95 During September, thousands of oldsquaws and some eiders occur in Guys Bight (36, 52).

SD 107 From early May until mid-August, thousands of eiders and some oldsquaws occur along the southeast coast of Bylot Island (50, 52).



Occurrence of Species and Resource Use

- R 96, 97
- R 94, 95, 97
- R 107, 108
- Na 94-97
- Bh 107
- HS 107
- Ch 94, 95
- Fu 94
- Fu 96
- Gu 94, 95, SD 95
- Gu 96
- AlGu 107
- SD 107


OPERATIONAL MAP 34
Erik Harbour
SHORELINE SENSITIVITY
Bylot Island
Baffin Island
Baffin Bay
Pond Inlet
Bh107
HS107
SD107
R107
AREA 107
A1107
Gu107
Cape Graham Moore
Fu96
Button Point
AREA 96
R96
Gu96
Na96
R97
Na97
AREA 97
Ch94
AREA 94
Na94
Gu94
Fu94
SD93
Guys Bight
AREA 95
Na95
R95
Gu95
Erik Harbour
Ch95
AREA 108
R108
Cape Macculloch
0
25 km
Transverse Mercator
73.0
72.9
72.8
72.7
72.6
72.5
77.5
77.0
76.5
76.0
75.5
75.0

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1.0 INTRODUCTION

An environmental sensitivity ranking scheme was used in this atlas to determine and illustrate the relative sensitivity of shoreline and offshore areas of the Lancaster Sound region to effects of marine oil spills. This system was developed to provide oil spill response personnel with a tool for establishing priorities for protection and cleanup.

The sensitivity ranking system is based on a scheme developed previously for the Beaufort Sea Atlas. Although there was a need to modify the scheme to some extent to reflect unique differences in the biophysical and social environments between the two regions, there were two distinct advantages to using a similar system. First, it ensured continuity in the method for evaluating resource sensitivity to effects of oil and the cleanup of marine spills. This could be very important if a future spill poses risks to several areas covered in different environmental atlases. It will allow oil spill response personnel to evaluate priorities for cleanup over the entire affected area based on similar decision criteria. Second, the Beaufort Sea Atlas has been available for widespread review by industry and government since its publication, and has been viewed as a very useful document for oil spill contingency planning, training, and cleanup.

Several criteria were identified as being important for consideration in the development of the sensitivity ranking system. Emphasis was placed on ensuring that the process will be as operationally practical as possible because of time constraints and limited personnel and resources available to respond to most spills. To this end, the relative sensitivity of an area is reflected in a single number that is calculated by weighing all important environmental and social components of the region. This numerical value is illustrated in the atlas as a low, moderate, high or extreme sensitivity ranking to allow rapid determination of the sensitivity of an area and eliminate the need to judge the significance of small differences in numerical values. However, it was also considered essential to provide an "audit trail" in the form of a detailed numerical analysis for the user to determine how the overall sensitivity was derived. This was considered an integral part of providing the information necessary to select the most appropriate contingency strategies given the biophysical and human use resources within an area.

2.0 GENERAL OVERVIEW

The sensitivity ranking system developed for the Lancaster Sound region incorporates 22 biophysical and social elements that are important from an oil spill response perspective. Selection of these elements was based on a review of literature regarding the sensitivity and vulnerability of resources to oil spills, resources identified as being important within this region in the Lancaster Sound Regional Land Use Plan (1989), and the overall availability of information on these resources. These environmental components were assigned to and ranked within four major sensitivity categories: (1) human use; (2) biological; (3) special areas; and (4) shore zone and marine oil residence. The latter grouping was developed to consider (1) the oil residence periods that may be associated with various coastal zone types; and (2) different ice and open water zones for the shoreline and offshore areas of Lancaster Sound, respectively. Based on their relative importance within the entire region, each category was given a Weighting Factor of between 1.5 and 2.0 (Table A1). The human use sensitivity category received the highest Weighting Factor to reflect the importance of protecting life styles, property and resource harvest opportunities in the event of an oil spill (Dickins et al., 1987).

Table A1
Relative Importance of Categories in the Environmental Sensitivity Ranking System

Category	Weighting Factor
Human Use Sensitivity	2.00
Biological Sensitivity	1.75
Special Areas	1.50
Shore Zone Oil Residence/Marine Residence	1.50

Elements within each of the four categories (except Special Areas) were ranked on a scale from 1 to 10 based on their relative sensitivity to potential effects of oil spills. The most sensitive elements received an Assigned Value of 10 and included environmental components such as

rare or endangered bird species and the presence of local human populations. The range of Assigned Values used for different elements within the Special Areas was 3 to 7. A maximum Assigned Value of 10 was not used for this group to avoid an over bias to the sensitivity ranking in areas that support important populations of wildlife and therefore should be assessed both in terms of the resources present (Biological Categories) and their designation as protected areas. The justification for selection and ranking of each element considered in the oil spill sensitivity analysis is provided in the following section.

The Relative Sensitivity of a specific shoreline or offshore area was determined by multiplying the Assigned Value and Weighting Factor for each biophysical and social element in an area, and then summing their products (Priority Indices) to produce a single numerical value. The sum of the Priority Indices was used to define the overall sensitivity of a particular area to an oil spill event. The following equation illustrates this procedure (Dickins et al., 1987):

$$S = (AV \times WF)$$

where: AV = Assigned Value
WF = Weighting Factor
S = Sensitivity of a specific area to oil, and
PI = (AV x WF)

Rankings of the shoreline and offshore areas were then consolidated into four degrees of sensitivity (LOW, MODERATE, HIGH, and EXTREME) to allow quick determination of the relative sensitivity of an area to a spill. A histogram of all sensitivity indices (S) for both shoreline and offshore areas within the Lancaster Sound region was constructed to assist in the selection of the numerical ranges of S values for each of the four sensitivity categories.

3.0 CATEGORIES IN THE ENVIRONMENTAL SENSITIVITY RANKING SYSTEM

3.1 Human Use Category

The Human Use Category focuses the decision-making process regarding priorities for oil spill cleanup and protection on those shoreline and offshore areas of the Lancaster Sound region that are important for human activities and cultural features and values. Residents of the region continue to have strong ties to the land for social and economic reasons, and these relationships are vital to maintaining their traditional life style.

3.1.1 Selection of Human Use Elements

Elements within the Human Use Category are defined as those natural, cultural, social or economic attributes of the region that are highly valued by the regional residents, and if affected by a marine oil spill, would be of concern to human populations (particularly local inhabitants). This category encompasses both past and present human use of the land and marine resources of the Lancaster Sound region and includes local communities and resource harvesting areas.

Land and Resource Use

Historical documentation of human use of land and renewable resources in the Lancaster Sound region is extensive, dating back to the time of European contact with the nomadic Inuit. Since the mid-1960s, scientists have been rigorously studying the Lancaster Sound environment and its use by regional residents.

As a part of the Lancaster Sound planning process, an assessment of published reports was undertaken in 1987 (Moll, 1987). This work identified information gaps and particularly the lack of accurate data on wildlife harvest. The major criticism of these studies has been that they are restrictive in time, space, and coverage. The purpose of documenting regional harvest use information in recent years has clearly been to develop a compensation response to resource development proposals by the oil and gas, mining, and transportation industry. The objective of resource harvest

monitoring initiated in the late 1970s (Finley et al., 1980) and early 1980s (Donaldson, 1983; 1984) was to quantify harvest/resource use in the Baffin region. Although the studies were useful in quantifying the level of domestically harvested species, they did not provide detailed information on hunting pressure for a given coastal or offshore region. Since the mid-1970s, the Lancaster Sound Regional Study and Data Atlas, Land Use Information Series Mapping Project, the Lancaster Sound Region Proposed Land Use Plan and Tungavik Federation Identification Project have examined land and resource use in the Lancaster Sound. However, because these studies were designed to achieve particular program objectives, they do not provide the level of detail required for this atlas.

To examine the relative importance of specific areas within the region throughout the year, the major data sources were reviewed and compared, and a technical review of biological information for the region was conducted to verify the human use information. The study team ranked each of the use areas into three major categories which are consistent with those developed for the Beaufort Sea Atlas. Areas with little or no use did not receive a ranking.

1. Areas of greatest importance to regional residents
2. Areas highly important to regional residents
3. Areas important to regional residents

Local Communities

There are presently four permanent settlements in the Lancaster Sound region. These include Resolute Bay, Arctic Bay, Pond Inlet, and a mining community at Nanisivik.

The community of Resolute Bay was first important in 1947 as a joint U.S./ Canada weather station. In 1953 and later in 1955, Inuit from northern Quebec were relocated to Resolute Bay to take advantage of the resources on Cornwallis Island. The community was moved to a new location in 1977, where it continues to be a High Arctic transportation and communication hub, staging point for scientific research, base for tourism expeditions, and major supply centre for domestic harvesting and sport hunting activities in the area.

The community of Arctic Bay is situated in an area that has been occupied by Inuit hunters for about 500 years. Permanent settlement occurred with the establishment of a trading post during the 1920s. The economy of Arctic Bay has been influenced since 1974 by employment opportunities at the Nanisivik lead-zinc mine. Arctic Bay is connected to the mine site by a 21 km all-weather road.

Pond Inlet has been populated since the 19th century and is located within an area that is rich in Thule culture archaeological sites. Today, the population is over 800 people, primarily of Inuit descent. The economy is mixed and includes retail trade, service sector, domestic hunting and fishing, tourism, and mining (Nanisivik).

Nanisivik is located 27 km by air west of Arctic Bay on the south shore of Strathcona Sound. Prior to mine development, there was little harvesting use of the area due to limited wildlife resources. The town site was developed as part of the industrial complex in 1974.

3.1.2 Ranking of Human Use Elements

Each of the elements within the Human Use Category was ranked according to its sensitivity to the effects of oil spill events. Table A2 presents the final ranking of these elements.

Land and Resource Use

Resource harvesting activities may be affected both directly and indirectly by an oil spill. Principal hunting areas are located along the coast and the offshore adjacent to the three major communities, outpost camps, and seasonal camps. The floe edge found at various locations throughout Lancaster Sound provides suitable habitat and excellent harvesting opportunities.

Areas of greatest importance to regional residents were defined as those areas that are most critical to protect; these included major resource harvesting camps that are used year-round. Due to the extent of harvesting activities in onshore and offshore areas close to Resolute Bay,

Arctic Bay, and Pond Inlet, these communities were considered major resource harvesting centres. Areas highly important to residents included those areas where seasonal hunting occurs and seasonal/traditional camps have been established. In the offshore areas, major floe edge or harvesting activity in close proximity to a traditional camp was also considered highly important to residents. Areas where seasonal harvesting occurs over a broad area where there are no camps were considered important to regional residents.

Table A2
Human Use Category

Sensitivity Element	Assigned Value	Weighting Factor	Priority Index
1. Areas of greatest importance to regional residents	10	2.00	20.00
2. Communities of Resolute Bay, Arctic Bay, and Pond Inlet	10	2.00	20.00
3. Areas highly important to regional residents	9	2.00	18.00
4. Areas important to regional residents	8	2.00	16.00

Local Communities

The communities of Resolute Bay, Arctic Bay, and Pond Inlet received the highest Assigned Value because these areas were considered to be the most critical to protect in the event of a marine oil spill. The shoreline areas and immediate offshore areas are important to community residents for a number of activities. Oil contamination would adversely affect social, economic, and cultural activities that are pursued in these coastal areas.

Although Nanisivik is a community with a population exceeding 300, the residents are primarily transient. The community is a single-industry town built around diminishing lead-zinc resources and its future is somewhat uncertain. The town site is located about 3.5 km inland and would not be affected by an oil spill. Nanisivik, therefore, is not included in the ranking for human use elements.

3.2 Special Areas Category

3.2.1 Selection of Special Areas Elements

The Lancaster Sound region has a variety of unique habitats that are of both national and international significance and, as such, are protected by government legislation. In addition to these parks, sanctuaries and designated wildlife areas, archaeological and historic sites have been included in the Special Areas category for this environmental sensitivity ranking system.

Archaeological and Historic Sites

The Archaeological Survey of Canada has identified over 1000 archaeological sites within the Lancaster Sound region. Although the entire area has not been surveyed extensively, this inventory is the most up-to-date compilation of historic and prehistoric information for the region. The extent of coastline examined for historic and prehistoric artifacts varies throughout Lancaster Sound, depending primarily on the nature and purpose of the surveys. While extensive systematic surveys have been conducted along much of the southern Devon Island coast, Cornwallis Island has been examined only in a cursory fashion, and Northern Baffin and Bylot islands have received little or no attention to date (P. Sutherland, Archaeological Survey of Canada, pers. comm.).

To protect these findings, only location information has been presented in this atlas. However, details on the importance of each of these sites can be obtained from the Archaeological Survey of Canada in the event of a marine oil spill.

In addition to the archaeological sites, the Department of Economic Development and Tourism, G.N.W.T., and Canadian Parks Service have identified a number of historic sites of interest within the region (Conservation Working Group, 1987; Lancaster Sound Regional Land Use Planning Commission, 1989). Although these sites have received no legal protective status through these government departments to date, all archaeological and historic sites in the north are protected by territorial legislation (Land Use Regulations, Historic Resources Act, and Archaeological Sites Regulations) and are managed by both the Archaeological Survey of Canada and the territorial governments (P. Goldring, Historic Parks, Canadian Parks Service, pers. comm.; C. Arnold, Prince of Wales Heritage Centre, pers. comm.).

Parks, Sanctuaries and National Wildlife Areas

There are several areas within the Lancaster Sound region that have been recognized as being particularly important for their wildlife or scenic/ recreational value (Lancaster Sound Regional Land Use Planning Commission, 1989). Sites that are currently protected through legislation include the Bylot Island Migratory Bird Sanctuary (Migratory Birds Convention Act) and the Polar Bear Pass National Wildlife Area (Canada Wildlife Act). The Canadian Wildlife Service (CWS) designated Bylot Island as a sanctuary to protect colonies of several bird species including murres, kittiwakes, terns, oldsquaw, king eider and greater snow geese. Two areas on the island of particular interest are Cape Hay and Cape Graham Moore, which support large colonies of thick-billed murres and black-legged kittiwakes. Polar Bear Pass received protective status because it has been used traditionally for wildlife harvesting and is the most significant area for wildlife on Bathurst Island. It provides nesting and feeding habitat for over 42 species of birds, supports large populations of Arctic fox, muskox and caribou, and is used as a migration route and occasional denning area by polar bear.

In addition to these sites, Prince Leopold Island and Lancaster Sound have been identified as areas to receive protective designations. The Canadian Wildlife Service has proposed to establish a Migratory Bird Sanctuary on Prince Leopold Island to protect thousands of fulmar, murres, kittiwakes and guillemots that nest in the area. A national park proposal has also been prepared by the Canadian Parks Service (Environment Canada) to protect the North Baffin/Lancaster Sound region because of its natural and cultural values. In some seasons, this region supports high concentrations of mammals and important seabird colonies, and also provides unique recreational and scenic opportunities. Although boundaries for the national marine park will not be finalized until after the Tungavik Federation of Nunavut land claims have been settled, a National Park Reserve could be established pending settlement of the claims (Environment Canada, 1987). The Lancaster Sound Regional Land Use Planning Commission has supported establishment of both the National Park Reserve and the Migratory Bird Sanctuary. In light of the eventual designation of these areas, it was concluded that these sites warranted appropriate recognition within the sensitivity ranking system.

Areas of Special Interest and IBP Sites

Several areas within the Lancaster Sound region have received official recognition because of their importance to wildlife or their value to future scientific research. These include CWS Key Migratory Bird Habitat Sites, DFO Priority Marine Habitat Areas, G.N.W.T. Renewable Resources Wildlife Areas of Special Interest, and International Biological Programme (IBP) sites.

Key Migratory Bird Habitat Sites are areas within the NWT that have been identified by the Canadian Wildlife Service as being essential habitats of various migratory bird species. The identification of these areas was intended to "serve as a statement of interest and is offered as a guide to the conservation efforts of other agencies" (McCormick et al., 1984, cited in Eng et al., 1989). DFO Priority Marine Habitat Areas and G.N.W.T. Renewable Resource Wildlife Areas of Special Interest have been identified as candidates for nomination as Special Marine Conservation Areas and Wildlife Conservation Areas, respectively. Although the government departments have identified these areas as being significant under their particular mandate, there is currently no legislation to allow their protection. Therefore, these sites do not presently warrant consideration in the sensitivity ranking system.

Between 1968 and 1974, Panels 9 and 10 of the Canadian Committee of the International Biological Program identified 120 sites in the Northwest Territories that were considered significant areas worthy of protection for

scientific study. Nine of these areas are located within the Lancaster Sound region. Although suggestions on protective mechanisms and some form of ecological reserves legislation were provided by the panels, these sites did not receive any form of government sanction and still have no legal status (Eng et al., 1989). At present, there is no mechanism in place to protect these sites unless the areas overlap with existing conservation designations (e.g., National Parks and Migratory Bird Sanctuaries). One notable exception to this is the Bracebridge-Goodsir Inlet IBP Site, which has received protection as a National Wildlife Area (Polar Bear Pass).

As an initiative under the Northern Mineral Policy released by the Minister of Indian and Northern Affairs Canada in 1986, the status of IBP sites is being clarified to assure the mining industry that exploration programs will not be disrupted due to future changes in land status. In a recent review and evaluation of all 120 sites within the Northwest Territories (Eng et al., 1989; Green and Eng, 1989), several recommendations were set forth regarding the disposition and management of these areas, which may change the existing status of IBP sites that are located within the region. It is recommended that the status of these areas be reviewed during future use of the atlas.

Eng et al. (1989) concluded from their review that the level of protection was adequate for IBP sites that overlap with existing Migratory Bird Sanctuaries and National Wildlife Areas (e.g., Bracebridge-Goodsir Inlet and Bylot Island). Other sites such as Baillarge Bay, Lancaster Sound Marine Area and Prince Leopold Island are expected to be adequately protected once the Canadian Parks Service and Canadian Wildlife Service implement National Park Reserve and Migratory Bird Sanctuary designations. However, for IBP sites that overlap with areas of interest which have no protective status (e.g., Devon Island, Hobhouse Inlet, and Somerset Island), it was recommended that the Canadian Wildlife Service designate appropriate key habitat sites as protected areas, and that the G.N.W.T. Renewable Resources select appropriate sites of interest as Wildlife Conservation Areas once legislation has been developed. Although the Creswell Bay IBP Site overlaps with a Preliminary Marine Area of Interest as identified by the Canadian Parks Service (James Dobbin Associates nd.), this does not provide any protection to the site through the federal or territorial governments at this time.

Within the Lancaster Sound region, the Canadian Parks Service has identified two Preliminary Marine Areas of Interest (Creswell Bay and Radstock/Maxwell Bay) and three Natural Areas of Canadian Significance (NACS) for potential consideration as a proposed park (I. MacNeil, Canadian Parks Service, pers. comm.). Due to the uniqueness of both the terrestrial and marine environments of the Bylot Island/Eclipse Sound NACS and the Admiralty Inlet NACS, the North Baffin and Lancaster Sound area has been selected as a proposed national and national marine park. The Prince Leopold NACS is located within the area proposed by the Canadian Wildlife Service as a migratory bird sanctuary.

3.2.2 Ranking of Special Areas Elements

Each of the elements within the Special Areas category was ranked in accordance with its potential sensitivity to oil spills as shown in Table A3.

Table A3
Special Areas Category

Sensitivity Element	Assigned Value	Weighting Factor	Priority Index
1. Archaeological/Historic sites	6-7	1.50	9.00-10.50
2. Sanctuaries & National Wildlife Areas	5	1.50	7.50
3. Proposed Parks & Proposed Sanctuaries	3	1.50	4.50

Archaeological and Historic Sites

Ranking of archaeological and historic sites was based on the potential for damage either directly through contact with oil or indirectly through cleanup activities. To ensure that areas containing numerous archaeological finds were ranked higher than areas where only a few sites have been

identified, a range of values (6-7) was assigned to this element. Based on the number of archaeological and historic sites within each of the designated shoreline areas for the entire study region, it was concluded that the presence of 10 or more sites represented an area of greater importance from an oil spill response perspective.

Parks, Sanctuaries and Designated Wildlife Areas

In recognition of their existing protective status, migratory bird sanctuaries and national wildlife areas received a higher Assigned Value than proposed national parks and sanctuaries (Table A3). Ranking of these elements was based on the potential for damage either directly by contact with oil along the coast or indirectly by cleanup activities in response to the spill. The overall Priority Index for existing sanctuaries and wildlife areas is slightly less than areas containing archaeological sites to reflect the fact that archaeological finds are a non-renewable resource. In addition, areas that provide important habitat for significant concentrations of wildlife will also be addressed in the biological category.

3.3 Biological Category

The Lancaster Sound region provides a variety of unique habitats that are essential to the survival of several million seabirds, and is also one of the most important marine mammal habitats in the eastern Arctic. The biological sensitivity category focuses decision making related to priorities for oil spill cleanup and protection on shoreline and offshore areas of the region where there are a large number of resources that are sensitive to the effects of oil.

3.3.1 Selection of Biological Elements

Elements within the biological sensitivity category are defined as those resources that are known to be sensitive and vulnerable to oil exposure; are important to regional residents, scientists or the public; and/or are a rare and endangered species. Based on these criteria, this category is represented by birds, marine and marine associated mammals and fish.

Birds

Five groups of birds were selected to represent the most abundant species that occur in the Lancaster Sound region: (1) sea ducks; (2) geese; (3) gulls; (4) fulmars; and (5) alcids. These groups are believed to include all of the major seabird and waterfowl species in the region (Table A4). Although other species of birds are known to occur in the study region, they occur only in very low densities or are primarily terrestrial, being found further inland.

Table A4
Important Bird Species in the Lancaster Sound Region

Sea Ducks	Oldsquaw King Eider Common Eider
Geese	Greater Snow Goose Brant
Gulls	Glaucous Gull Ivory Gull Black-Legged Kittiwake Arctic Tern
Fulmars	Northern Fulmar
Alcids	Black Guillemot Thick-Billed Murre Dovekie

Marine and Marine Associated Mammals

Beluga, narwhals, ringed seals, bearded seals, harp seals, walrus and polar bears were included in the biological sensitivity category because of their importance to regional residents as harvested resources. While some of

these species occur in the Lancaster Sound region only during spring to late summer, small overwintering populations of ringed seal, bearded seal, and walrus are known to occur in the area. The bowhead whale was also included within this category because of its endangered status.

Marine Mammal Species

Ringed Seal	RS	(*Phoca hispida*)
Bearded Seal	BS	(*Erignathus barbatus*)
Harp Seal	HS	(*Phoca groenlandica*)
Walrus	Wa	(*Odobenus rosmarus*)
Narwhal	Na	(*Monodon monoceros*)
Beluga	Be	(*Delphinapterus leucas*)
Bowhead	Bh	(*Balaena mysticetus*)
Polar Bear	PB	(*Ursus maritimus*)

Seasonal Occurrence

	Ja	Fe	Ma	Ap	My	Jn	Jy	Ag	Se	Oc	No	De
RS	—	—	—	—	—	—	—	—	—	—	—	—
BS *	+	+	+	+	—	—	—	—	—	—	+	+
HS						-	—	—	—	-		
Wa*	+	+	+	+	—	—	—	—	—	—	+	+
Na					—	—	—	—	—	-		
Be					—	—	—	—	—			
Bh					—	—	—	—	—	-		
PB	—	—	—	—	—	—	—	—	—	—	—	—

* + = small overwintering populations in polynyas and flaw leads.

Consideration was given to including terrestrial mammals such as Peary caribou and Arctic fox within the biological category because of their vulnerability to oil exposure in nearshore habitats and, in the case of the latter species, on the landfast ice during winter. However, due to the lack of site-specific information on the distribution and abundance of these species in the Lancaster Sound region, it was not possible to include them in the atlas. Furthermore, it was considered unlikely that Peary caribou would be significantly affected by a marine oil spill given the seasonal use of their inter-island winter crossings.

Fish

Only two species of fish (Arctic cod and Arctic char) were selected for inclusion in the atlas. These species are the most widely distributed and important species in the Lancaster Sound region.

The Arctic char (*Salvelinus alpinus*) is the only anadromous fish in the region. While most populations remain in freshwater throughout their life cycle, some char migrate to coastal waters in early summer to feed. While at sea, char are generally found no more than 40 km away from their natal streams, and are restricted to the warmer and less saline shallow waters close to shorelines. Although their marine distribution is relatively well known, further research will undoubtedly indicate additional areas where they occur. Arctic char are a preferred food item for regional residents when available, and form the basis of limited sport and commercial fisheries. Because of its importance as a food and sport fish, this species was considered in the biological sensitivity category.

The Arctic cod (*Boreogadus saida*) is the most important marine fish inhabiting the region. Although it is of rather limited direct value to man, it is of major importance in arctic food webs. As one of the most abundant and widespread marine fish in the Arctic, cod are the primary food item for several species of marine mammals and seabirds. In contrast to Arctic char, there is very limited information on the distribution and abundance of Arctic cod. They are known to occur sporadically in very large numbers (i.e., 1,000s to 10,000s) in nearshore shallow water areas during late summer, and are found in close association with sea ice and the epontic community during spring.

A considerable number of other marine fish occur in the Lancaster Sound region, but information on the distribution and abundance of these species is even more scant than for Arctic cod and char. Nearshore, shallow water areas in the Arctic are not used extensively by most marine fish. The shallow water fish fauna usually consists of sculpins, eelpouts, and lumpfish. Deeper water marine fish include species such as halibut and sharks. These species were not considered in the atlas, however, because of the lack of available information and the limited historical use of these species in the region.

3.3.2 Sensitivity of Biological Resources to Oil

The relative sensitivity of each biological resource to effects of oil was determined by simultaneously considering the vulnerability to oil exposure, sensitivity of individuals to the toxic or physical effects of oil, and the anticipated recovery period of a population. To determine the vulnerability of a resource to oil exposure, the life strategy (e.g., feeding and breeding behavior) of the species, together with the spatial and temporal distribution of a population was examined. The potential for sublethal or lethal effects was based on available information from past marine oil spills, and laboratory and field research. A combination of factors were considered to determine the period required for a population to recover from the effects of an oil spill. These included (1) the type of physical or toxic effect (sublethal or lethal); (2) the status of a population (i.e., whether it is classified as a rare or endangered species); (3) the reproductive capacity; and (4) the potential for recruitment through immigration of individuals from other populations or adjacent areas.

To allow subsequent ranking of each element within the biological category, HIGH/LONG, MODERATE, or LOW/SHORT were used to describe the vulnerability, sensitivity, and recovery period of each resource in a consistent and relative manner (Table A5). Although application of these terms requires some subjective judgement, this overall approach was adopted because it ensures that the ranking is based largely on the oil effects literature and therefore is scientifically defensible. In addition, this sensitivity ranking system was reviewed and accepted by various individuals from government for use in the Beaufort Sea Atlas, and variations on this general approach have been used in other environmental atlases.

The following provides the justification for the vulnerability and sensitivity assigned to each key biological resource.

Vulnerability

Of all the biological resources included within the sensitivity ranking system, alcids (murres, guillemots, and dovekies) were considered the most vulnerable to oil spills because they spend most of the year at sea foraging on or below the water surface, where the potential for contact with oil would be highest. Alcids are also highly gregarious and tend to congregate in certain offshore foraging areas. They dive to feed and when alarmed, which makes these species more vulnerable to oiling than birds that feed on the wing and take flight when disturbed. In contrast, brant and geese spend a significant proportion of their time in terrestrial or backshore habitats and, therefore, are considered the least susceptible to oil contact.

Northern fulmars were considered highly vulnerable to oil exposure because of their colonial breeding behavior and feeding habits. During the incubation period, fulmars are widely distributed along coasts and ice edges and in offshore areas of Lancaster Sound and Baffin Bay. However, activities are centered around colonies during the nesting period, and they may travel up to 300 km from the colony to forage. They are surface feeders, preying mainly on pelagic invertebrates, but they may also feed on fish during brood rearing (Bradstreet, 1976, cited in Dome Petroleum et al., 1982a).

Sea ducks were also considered highly vulnerable to contact with oil because of their distribution and feeding behavior. While king eiders nest inland, common eiders nest colonially near the coast and rear their young at sea. Males of both species of eider abandon their mates and gather at sea soon after egg laying. A substantial population of nonbreeding eiders (and oldsquaws) use coastal waters. Consequently, one half of the entire eider breeding population as well as the nonbreeders and common eider broods spend their summer at sea. Unlike the seabirds that may occur offshore in large numbers, all sea ducks are concentrated along the coast. This group of birds are also considered vulnerable to oil exposure because they dive to feed.

Table A5
Sensitivity and Vulnerability of Key Biological Elements to the Effects of Oil

Species	Vulnerability	Potential for Sublethal Effects	Potential for Mortality	Recovery Period
Murres, Dovekies & Guillemots	Extremely High	High	High	Long
Sea Ducks	High	High	High	Moderate
Fulmars	High	High	High	Long
Kittiwakes, Gulls & Terns	Mod-High	High	High	Mod-Long
Geese	Moderate	High	High	Moderate
Ringed Seals	Mod-High	High	Moderate	Moderate
Bearded Seals	Mod-High	High	Moderate	Moderate
Harp Seals	Mod-High	High	Moderate	Moderate
Walrus	Mod-High	Moderate	Low	Moderate
Polar Bears	High	High	Moderate	Moderate
Bowhead Whales	Mod-High	Mod-High	Low	Long-No recovery
Beluga Whales	Mod-High	Moderate	Low	Long
Narwhals	Mod-High	Moderate	Low	Long
Arctic Char	Mod-High	Moderate	Low-Mod	Short
Arctic Cod	Mod-High	Moderate	Low-Mod	Very short

* Sublethal effects sufficient to cause changes in the distribution or reduce the reproductive capacity of some individuals in the affected population.

The potential for contact with an oil spill was considered high for polar bears due to their distribution during winter and spring, and their feeding behavior. Polar bears would be most vulnerable to contact with oil when most adult males, non-breeding females and subadults are found near ice edges and open leads where oil may accumulate and their primary prey (ringed seals) may be present in relatively large numbers (Stirling et al., 1982). This would increase the potential for contamination of swimming polar bears as well as the potential for oil ingestion through consumption of contaminated prey.

Of the bird species, kittiwakes, gulls, and terns were considered moderately to highly vulnerable to oil exposure. Kittiwakes, gulls, and terns nest colonially in Parry Channel and are abundant in marine areas throughout the region during summer. Although these species are vulnerable to oil exposure due to their tendency to congregate during these times, they are considered less vulnerable to oiling than alcids, fulmars and sea ducks because they spend a large proportion of their time in the air.

Marine mammals and fish were also judged to be moderately to highly vulnerable to oil spills. Seals would be particularly vulnerable to contact with oil during feeding activities and/or during the breeding season. Although ringed seals are widely distributed throughout the Lancaster Sound region and rarely occur in large or dense aggregations, they occur in highest densities on stable fast ice during the breeding season and are especially vulnerable to oil exposure at this time. Inhalation of volatile compounds and oiling of the pelage could cause serious damage to pups and adults in the birth lairs. Repeated contact with oil could occur during the month-long moult if seals repeatedly enter contaminated waters. The bearded seal is also widely distributed throughout the region during summer, and is a solitary species that occurs in low densities in close association with moving pack ice. However, it feeds mainly on benthic and epibenthic organisms and therefore is vulnerable to oil exposure through ingestion of contaminated prey. The harp seal migrates into Lancaster Sound along the fast ice edge where they could contact oil. They usually occur in small herds of fewer than 20 individuals, although they occasionally gather in herds of up to several thousand animals to feed.

Like bearded seals, walruses are vulnerable to oil spills because they feed extensively in relatively shallow benthic habitats where oil can accumulate

and persist. In addition to their feeding habits, their colonial breeding behavior also makes them vulnerable to oil exposure. In midsummer, walrus congregate at traditional terrestrial haul-out sites, where they are also very susceptible to disturbance (Salter, 1979).

Whales are not particularly sensitive to petroleum hydrocarbons but are vulnerable to spills because of their feeding behavior and preferred travel routes (Duval et al., 1981). The beluga, bowhead and narwhal would be most susceptible to oil spills during spring migration and when they are present on their summer range.

Lancaster Sound is the principal migration corridor for the entire eastern Canadian High Arctic population of belugas, which is estimated to number 12,000 to 14,000 whales (Davis and Finley, 1979; Smith et al., 1985). In mid-summer, they concentrate in large numbers in certain estuaries, where they are especially vulnerable to disturbance (Finley, 1982). This population would also be vulnerable to contact with oil during their eastward fall migration, when they are present in large compact herds. Bowhead whales would be highly vulnerable to oil contact when they congregate in summering grounds. These are located primarily in bays of Lancaster Sound where oil could persist and accumulate. Although narwhals are usually found widely scattered in offshore pack ice, they are often densely concentrated in migration corridors along ice edges or in leads during migration. Groups of several hundred to a few thousand whales may also occur in relatively small areas during midsummer. At these times, a substantial proportion of the narwhal population would be potentially vulnerable to oil exposure.

Anadromous Arctic char migrate to marine waters in early summer and feed in coastal waters on epibenthic invertebrates and to a lesser extent small fish and large zooplankton. Their distribution is generally restricted to a relatively narrow band that extends about 40 km away from their natal streams along the warmer and saline shallow waters close to shorelines. This tendency to remain in nearshore areas makes this species particularly vulnerable to oil due to the potential for contamination of sediments and prey.

Very large schools of Arctic cod move into nearshore areas of bays during late summer. Such movements into nearshore waters and their close association with sea ice and the epontic community at other times of the year makes this species particularly vulnerable to contact with oil. Arctic cod eggs and young-of-the-year are more vulnerable to contact due to their presence at the water surface and the upper portion of the water column and are more sensitive to oil than adult stages. However, because they are widely dispersed by currents, only a small proportion of eggs and larvae would likely be affected by a spill.

Sensitivity

Marine birds are often the most visibility affected resource following marine oil spills. This situation is likely to be more pronounced in cold environments where the sensitivity of marine birds to oil is expected to be high due to the combined effects of low temperatures and the presence of ice (Trudel, 1985). Birds are sensitive to oil exposure through direct contamination of their plumage and through ingestion of oil-contaminated food, which can cause a range of effects from minor sublethal responses to loss of insulative capacity of the plumage leading to hypothermia or drowning following loss of buoyancy (Duval et al., 1981). In addition to potentially causing internal tissue damage, changes in physiology and death, ingestion of oil can also result in a number of responses that may influence overall reproductive success (e.g., reduced hatching success, delayed oviposition, reduced rate of egg production) (Brown, 1981).

Seals and polar bears were considered the next most sensitive species to effects of oil spills. Numerous laboratory and field investigations have shown that contact with oil can lead to a range of physical, behavioral, physiological and indirect effects in these species. Mortality of seals has occasionally been reported following past marine oil spills, but data unequivocally linking deaths with the presence of oil has seldom been available (Harwood, 1985).

Ringed seals are very sensitive to oil during certain times of their life history, particularly during periods of natural stress such as low food availability, adverse ice conditions or during the month-long period when adults haul out to moult. The most serious impacts could occur if oil reached primary pupping habitat. Contamination of breeding habitats could result in extensive mortality of juveniles and adults. Potential

effects of oil on bearded seals are probably similar to those documented for ringed seals, although they may be more susceptible to ingestion of oil-contaminated prey and bioaccumulation of petroleum hydrocarbons because they feed on benthic species in relatively shallow areas.

Polar bears could be affected by ingestion of oil-contaminated prey or through direct contact with oil. In addition to potential adverse effects on thermal insulation, grooming of fur can result in serious physiological disorders leading to death (Engelhardt, 1981). There are no documented cases where death of polar bears has resulted from exposure to oil in their natural environment, but mortality of bears has resulted from oil exposure and ingestion during field investigations.

Whales and walrus were considered moderately sensitive to the effects of oil. While there is little evidence to suggest that an oil spill would result in direct mortality of these animals, sublethal effects resulting from ingestion of oil-contaminated prey and avoidance responses could have serious impacts on these populations. Bowhead whales could be especially sensitive to oil due to their feeding behavior and potential for fouling of the baleen. Walruses were considered less susceptible to thermoregulatory stress than seals because they rely exclusively on thick skin and blubber for insulation (Smiley, 1981).

There have been no reported cases of mortality of walrus or whales following past marine spills. However, it is considered possible that loss of some individuals could occur if major concentration and feeding areas or leads become contaminated with substantial amounts of oil and walrus and whales are repeatedly exposed to this oil through physical contact with the oil and ingestion of contaminated prey.

Arctic cod and Arctic char were also considered moderately sensitive to effects of an oil spill. Oil exposure has been shown to cause a range of toxic and sublethal effects in fishes. While many of the sublethal effects are minor, short term and completely reversible, others such as disruption of growth or energy metabolism may be of longer-term significance (Duval et al., 1981). The general tendency for oil to be less toxic in seawater than in freshwater suggests that the greatest potential acute toxic and sublethal effects may occur in coastal areas influenced by freshwater drainages, which are important feeding areas and have a high oil retention capacity due to the fine sediments. The most significant concern to Arctic char populations would be the potential for disruption of the spawning migration due to avoidance of oil. Exposure to sublethal concentrations of oil has shown to cause a delay in return to natal streams (Trudel, 1985).

The potential for mortality of fish was considered to be low to moderate due to the fact that loss of fish has occurred as a result of past oil spills, but generally following spills in relatively confined areas such as bays and estuaries (Duval et al., 1981). In most cases, damage to Arctic fish populations would likely take the form of sublethal effects including possible tainting, and short-term behavioral and physiological abnormalities.

Recovery Period

The eastern Arctic population of bowhead whales would likely require the longest period to recover from any loss of individuals or reduction in the reproductive capacity of individuals associated with effects of a marine oil spill. The eastern Arctic bowhead is an endangered species. It was estimated that less than 100 individuals entered Lancaster Sound in the summer of 1978 (Davis and Koski, 1980). Loss of individuals from this population as a result of an oil spill could have a significant impact due to the very low reproductive potential of this species and the limited opportunity for recruitment of individuals through immigration from adjacent areas.

Due to the low reproductive rate of beluga and narwhals, the recovery period of these populations is expected to be long. However, because of large population sizes and potential immigration of individuals from adjacent areas, the recovery period would not likely be as long as that anticipated for the bowhead whale population. The most recent estimate of the narwhal population in the High Arctic archipelago is about 18,000 whales (Strong, 1988), while the entire Canadian High Arctic population of belugas has been estimated at between 12,000 and 14,000 whales (Davis and Finley, 1979; Smith et al., 1985).

Although long-lived and having a high survival at all ages, alcids were also expected to have a long recovery period because they produce only a single egg each year and are slow to mature. Similarly, northern fulmar have a

low annual reproductive potential (i.e., a clutch size of one egg) and no replacement clutches are laid. This species has the longest nesting interval of any Arctic-nesting species (Godfrey, 1966), and nest site tenacity is highly developed. Any losses from a colony will unlikely be restored through recruitment of individuals from adjacent colonies. The rate of recovery of kittiwake, gull and tern populations would likely be slightly shorter in comparison, due to the reproductive potential (i.e., clutch sizes of two or more commonly three eggs) of these species.

The reproductive potential of ringed and bearded seals is low, with females producing only a single pup each year. However, the rate of recovery of these populations was considered to be moderate relative to whales and alcids because they are abundant and widespread throughout the Arctic and have shown an inherent ability to recover quickly from natural declines, primarily through large-scale immigration (Stirling et al., 1982).

Although extensive mortality of polar bear populations is unlikely due to their widespread distribution, their reproductive potential is not high and therefore the rate of recovery of these populations would likely be similar to that of seals. Polar bears breed only once every 3-4 years, and the females generally do not have their first litter until age five or older. Usually there are only two cubs per litter, although one, three, and rarely four cubs may be born.

Recovery of affected fish populations would depend primarily on rate of recruitment of individuals from adjacent areas, the reproductive capacity of remaining individuals, and the persistence of oil in shallow coastal areas or in offshore sediments. Based on past experience, it is expected that any changes in the abundance of fish populations would likely be short term for three reasons: (1) detectable decreases in fish abundance has not been documented following past oil spills; (2) there is often movement of individuals between populations and; (3) reproductive capacity of most fish species is high due to large numbers of offspring. However, because Arctic char do not generally mature until they are about 10 years old, and mature fish probably spawn only once every 2 or 3 years, the rate of recovery of these populations is expected to be longer than that associated with Arctic cod.

3.3.3 Ranking of Biological Elements

To rank the overall sensitivity of each element within the biological category, the LOW/SHORT, MODERATE, and HIGH/LONG descriptors used to describe the vulnerability, sensitivity, and recovery period of each species were assigned numerical values ranging from 1 to 5, where:

Very Low/Short	= 1
Low/Short	= 2
Moderate	= 3
High	= 4
Very High/No Recovery	= 5

These values were then summed to give an overall index that reflected the relative sensitivity of each species to the effects of oil (Table A6).

Where $RS = (V \times 2) + S1 + S2 + R$

RS	= Relative Sensitivity of a species to the effects of oil
V	= Vulnerability
S1	= Potential for Mortality
S2	= Potential for Sublethal Effects
R	= Anticipated Recovery Period of a population

More emphasis was placed on the vulnerability of biological resources to oil exposure to ensure that the relative sensitivity was not overweighted for a population that may be particularly sensitive to the toxicity of oil, but is unlikely to contact oil because of its widespread distribution or life strategy.

Table A6
Relative Sensitivity of Key Biological Elements to the Effects of Oil

Element	Relative Sensitivity
Alcids (Murres, Guillemots, Dovekies)	22.0
Fulmars	20.0
Sea Ducks	19.0
Gulls (Kittiwakes, Gulls, Terns)	18.5
Geese (Snow Geese, Brant)	17.0
Ringed, Bearded & Harp Seals	17.0
Polar Bears	18.0
Bowhead Whales	17.0
White Whales & Narwhals	16.0
Walrus	15.0
Arctic Char	14.5
Arctic Cod	13.5

The overall sensitivity of each biological element within each area was determined through consideration of (1) the relative sensitivity of the species or species group to oil (from Table A6 above); (2) the abundance of that resource in the area; and (3) the proportion of the season when that resource was actually present in the area. The following expression was used to determine area-specific Priority Indices (PI):

$$PI = AV \times WF$$

where AV = Assigned Value, WF = Weighting Factor (1.75), and the Assigned Value was computed as:

$$AV = (RS \times RA \times SM) / 11$$

where RS = Relative Sensitivity to oil (13.5 to 22.0) from Table A6, RA = Relative Abundance (a value of 0, 2 or 5 as described below), and SM = Seasonal Modifier (a value of 0.25, 0.5, 0.75 or 1.0 as described below). The integer 11 was incorporated in this expression to ensure that the maximum Assigned Value for any biological element did not exceed 10.0, given the maximum value that could be calculated for the product of RS, RA and SM ($22 \times 5 \times 1 = 110$).

Relative Abundance

It was considered important to evaluate the relative abundance of each biological element in an area in determination of its overall sensitivity to oil spills. If a specific resource was not found in an area, the value of RA was taken as zero to produce an Assigned Value (AV) of 0 regardless of the sensitivity of that resource to oil exposure. When a significant proportion of the regional population of a species occurs in an area then an RA value of 5 was used. The proportion of the population that is considered significant was determined independently for each element present, but at less than the threshold for a significant proportion of its population, an RA value of 2 was employed in the sensitivity analysis.

Seasonal Modifier

The sensitivity of an area would be potentially higher if key resources were present throughout most or all of the open water season rather than only during a few weeks (e.g., during spring or fall migration). For this reason, the Assigned Value for each resource and area included a component for the Seasonal Modifier. Each season was apportioned into quarters and SM values of 0.25, 0.5, 0.75, and 1 used in calculation of Assigned Values, depending on the approximate period that a given resource inhabited the area. For shoreline areas, the May to October period was divided into quarters based on a 22 week season. For offshore areas, the periods May to August and August to October were treated as separate seasons and were divided in quarters based on a 13 week season and 9 week season, respectively.

The biological sensitivity category is predicated on the assumption that the effects of an oil spill will be greatest if a significant proportion of the regional (eastern Arctic) population is affected. The proportion of the population that is considered significant has been determined independently for each biological resource based on population estimates and densities, and the reproductive potential of a species.

Birds

Climatic conditions of the High Arctic can vary substantially, thereby affecting the proportion of birds that nest and the proportion of young that survive. In years when birds do not nest, their distribution can differ quite significantly from that in nesting years. In addition, the number of nonbreeding birds therefore tends to be quite variable from year to year, which makes it difficult to derive a meaningful population estimate. Consequently, density indices obtained from aerial surveys were used to determine a significant proportion of a population. Because these densities were not adjusted to account for those undetected by the observers, they likely underestimate the actual numbers of birds present along the survey transects. Based on these data, it was concluded that 40 birds/km^2 represented a significant proportion of all the bird species, with the exception of guillemots where 100 bird/km^2 constituted a significant proportion of a population. In addition, any colony consisting of 50+ pairs of glaucous gulls, terns and guillemots was also mapped and ranked in the atlas.

The distribution of birds along the coast of the Lancaster Sound region is related to the ice/water interface in much the same manner as the land/water interface where it occurs. To ensure that the presence of large numbers of birds in an area was included within the atlas, each shoreline area was considered to extend 1 km offshore from either the landfast ice edge or the coast, whichever prevails.

Marine Mammals

Available information on densities and population sizes of marine mammals in the Lancaster Sound region is of variable quality for the purpose of assessing what represents a significant concentration and/or proportion of a population of each species. Density indices obtained from aerial surveys are the standard measure of abundance for most species but are of limited value for assessing abundance of rare species such as the bowhead whale, species with strongly clumped distributions such as the walrus, or species that are difficult to detect such as the polar bear. Aerial surveys can not be used to evaluate the winter distribution and relative abundance of ringed seals, which live beneath the snow and ice; other winter census methods have yielded variable results that can not be reliably applied for this type of analysis (e.g., Smith et al., 1978; Calvert and Stirling, 1985). Finally, the pattern of seasonal movements, distribution and abundance of most species varies, depending on the location and consistency of ice formation, dispersal and distribution from year to year. Nonetheless, marine mammals are conservative in habit, following traditional migration routes and occupying certain areas and habitats with a fairly high degree of consistency. These important areas are identified in the atlas by using a combination of high density indices and/or total numbers obtained from aerial surveys.

Ringed Seal

The ringed seal is ubiquitous and abundant throughout the year in the Parry Channel region. It is most abundant in areas with stable fast ice, where it typically occurs in densities of 0.2 - 1/km^2 during the spring haul-out season. Ringed seals do not occur in dense aggregations. Areas with densities exceeding 3/km^2 were judged to be significant concentrations of this species. This represents the top three percent of ringed seal densities obtained on aerial transects of Barrow Strait (Finley, 1976).

Bearded Seal

The bearded seal is widely distributed throughout the Parry Channel region during summer and occurs in low densities. The population size is unknown. Coastal areas with densities exceeding 0.1/km^2 were judged to be significant concentrations of this species for the sensitivity analysis.

Harp Seal

A relatively small and variable proportion of the western Atlantic population of harp seals enters Lancaster Sound during the summer. They are a highly gregarious species, often occurring in dense feeding aggregations. Areas with densities exceeding 20/km^2 were judged to be significant concentrations of this species. This represents the top three percent of harp seal densities obtained on aerial transects of Lancaster Sound (Johnson et al., 1976).

Walrus

Walruses are difficult to census accurately through systematic aerial surveys because of their clumped distribution and their limited abundance in the Parry Channel region. Davis et al. (1978) roughly

estimated that the summer population in the central archipelago was about 1000 animals; most of these animals migrate through Lancaster Sound but some (few hundreds) remain in coastal waters of eastern Lancaster Sound throughout the summer. Two criteria were used for selecting areas for sensitivity ranking: five percent of the regional population (roughly estimated at 1500) or densities exceeding 2/km^2. The latter figure represents the top three percent of walrus densities obtained on aerial transects of Lancaster Sound (Johnson et al., 1976).

Bowhead Whale
The bowhead whale is an endangered species and has a very low reproductive rate. Davis and Koski (1980) estimated that less than 100 entered Lancaster Sound in the summer of 1978. Three percent of this number was judged to be a significant proportion of the population.

Narwhal
In summer, a large proportion of the world population of narwhals enters Lancaster Sound and occupies traditional summering areas adjacent to Parry Channel. The most recent estimate of the summer population in the High Arctic archipelago is about 18,000 whales (Strong, 1988). Two criteria were used for designating areas where a significant proportion of the population is likely to occur: five percent of the estimated population or densities that exceeded 5/km^2. The latter figure represents the top three percent of narwhal densities obtained on aerial transects in Lancaster Sound (Johnson et al., 1976).

Beluga
Lancaster Sound is the principal migration corridor for the entire eastern Canadian High Arctic population of belugas, which is estimated to number 12,000 - 14,000 whales (Davis and Finley, 1979; Smith et al., 1985). Because the population dynamics of the beluga are similar to that of the narwhal, the criteria for determining a significant proportion of the population are the same (i.e., five percent of the population or densities greater than 5/km^2).

Polar Bear
The polar bear population of the Parry Channel region is considered to be a relatively discrete subpopulation, estimated from mark-recapture techniques to number at least 1,700 animals (Schweinsburg et al., 1982; Stirling et al., 1984). During winter and spring, polar bears are widely dispersed in Parry Channel, although they tend to concentrate along the shear zone that parallels coastlines and in the vicinity of the floe edge which varies in location from year to year. During break-up, polar bears tend to move westward with the retreat of the ice and concentrate in bays or fiords where fast ice remains longer in the summer (e.g., the south coast of Devon Island). These complex coastal areas freeze up earlier than offshore areas and therefore provide earlier access to the principal food resource, ringed seals. Polar bears, especially females and young, concentrate at and show a high fidelity to these summer feeding and/or refuge areas. Stirling et al. (1979) state that the localized nature of these sites makes them especially important, possibly to the point where they can be defined as critical. Aerial surveys are not well suited for census of polar bears, although they have been widely used in the Arctic to provide a rough index of abundance. In the atlas, areas with densities exceeding 0.03/km^2 were designated significant areas. In addition, areas that have been identified by Stirling et al. (1979) as critical summer retreats are identified, although density indices from aerial surveys may not be available.

Fish

Available information regarding population sizes and use of shoreline and offshore areas of Lancaster Sound by Arctic cod and Arctic char is inadequate to determine what constitutes a significant number of individuals of each species. Consequently, the atlas identifies areas within the region where the presence of these fish have been documented. Due to the sporadic occurrence of Arctic cod, there are few reports of this species in nearshore waters. However, it is likely that Arctic cod occurs in numerous areas other than those indicated in the atlas.

3.4 Shore Zone Oil Residence Category

3.4.1 Selection of Shore Zone Oil Residence Elements

The shore zone oil residence category was developed to consider the time required for natural processes to disperse oil from the shoreline. This category only applies as an oil residence indicator for the summer months.

During the winter (October to May) oil spilled in pack ice is frozen into the growing ice sheet and will not contact the shore until ice break-up. In many areas landfast ice also prevents new oil from reaching the shoreline in June and July and again in the fall after freeze-up. Oil already present on the shoreline at the onset of freeze-up in October remains frozen until late June or early July of the following year. Consequently, oil is not a potential threat to the shore zone in the winter.

In early summer when the mean daily air temperatures are above 0°C, oil left on shore from previous years is exposed as the snow cover melts. Oil spilled offshore over the winter will contaminate the shoreline following ice break-up. The main weathering process acting on the oil once it is stranded on the shore is physical degradation. Oil persistence on shorelines will then largely depend on the period the shoreline is exposed to wave action during the open water season.

Although oil is only exposed for a relatively short time each summer, the absolute duration of oil persistence in protected coastal areas can extend to several years. Oil spill experiments conducted at Cape Hatt as part of the Baffin Island Oil Spill Project (BIOS) provide the best data set on long-term oil fate and behavior in a High Arctic environment.

Wave energy and ground-water leaching were found to be the dominant physical processes in the removal of oil even from very sheltered beaches. After two seasons (18 weeks of open water) 80% of the oil initially stranded on the intertidal zone was removed (Owens et al., 1987). However, oil removed from the beach was transported by sediment erosion, ice scour, and other processes to the subtidal sediments where the oil concentrations increased by a factor of six over the 2 year period (Owens et al., 1987; Boehm et al., 1987). Significant amounts of oil remained in the backshore zone after 3 open water seasons. Climate and soil conditions rather than wave action were found to play a major role in the fate of oil in the backshore zone.

Persistence of oil in the shore zone is influenced by a number of factors including wave exposure, shoreline morphology, shoreline substrate and stability, and shore/ice interaction. Based on these factors, nine coastal types were used to describe the shoreline of Lancaster Sound.

Table A7
Description of Coastal Types

Estuaries and Bays

This classification includes not only estuarine environments but other environments, within coastal embayments, which have narrow entrances and limited exposure to the open coastline.

Estuarine environments are commonly found at the heads of fiords and are associated with larger coastal delta complexes. They are characterized by shoals, numerous distributary channels with intertidal sand or mud flats, and low lying backshore relief. Although the backshore may be dominated by fluvial processes, waves at the shoreline are frequently still the primary sediment transport force. Many of the distributaries in these environments are active for only a short period each year and the majority of the annual discharge may occur within a period of only a few weeks.

Barrier Beaches and Lagoons

Barrier beaches are generally low lying coastal plain environments characterized by narrow barrier beaches and spits backed by inter-connected lagoonal systems. The coastlines are commonly associated with numerous coastal streams and deltas supplying sediments to the shore zone.

In low energy environments these barrier/lagoonal systems are commonly discontinuous and are subject to modifications by storm wave action. In some cases these barriers may remain unchanged during several open water seasons, but can undergo considerable modification during one storm event. Along the more exposed coastlines the barriers are more continuous, interrupted only by narrow tidal inlets and/or rock headlands. On the higher energy barriers evidence of over-wash is common.

The barriers associated with the low energy environments are usually in the finer sediment size range (sands and pebbles) while the higher energy environments range from sands to cobbles.

Coastal Flats

Coastal flats are characterized by a very low lying backshore with continuous beach, usually in the sand and pebble size range with scattered cobbles and boulders. The backshore is dominated by numerous dissecting braided stream

channels which form an irregular topography. Where these channels intersect the shoreline, small barrier beaches and spits often develop across stream mouths. Beach berm and ridges are generally less than one half meter in height allowing for easy over-wash into the backshore. Shallow intertidal flats and shoals are common along most sections, ranging from 10 - 100 meters in width and extending to over 500 meters where larger deltas intersect the coast. In areas of ice dominated shorelines, ice-push features are frequent.

Raised Beaches

Raised beaches are generally a continuous beach environment with low to moderate backshore elevations. They are characterized by multiple, abandoned beach sequences inland as a result of the emergence of the land relative to the present sea level. Substrate types are generally mixed sediments, usually combined sand, pebbles, cobbles, and scattered boulders in various degrees. Sediment are poorly sorted in most sections, except where the source for littoral sediments is of a single grain-size range. Some cross shore zonation is evident with finer materials on the lower beach face, and coarser sediments being selectively deposited on the upper part of the beach as a storm ridge.

Ice-push and ice-override features are common along many of these coastlines. Individual ice-push ridges form as ice floes ground and plough sediments into an arcuate or lobate shaped ridge along the beach. The floe then melts, leaving an individual ridge in the upper intertidal zone or in the backshore above the limit of normal wave action. Where the grounding of individual floes is frequent during the open water season, a series of coalescing ice-push ridges can form a very hummocky terrain in the shore zone.

The formation of active and relic beach ridges along these coastlines indicates sufficient wave action at the shore zone to rework sediments. These coastlines are, however, commonly in low wave energy environments where the reworking of sediment would be restricted to open water storm events. On coastlines where ice-push features are preserved in the shore zone, reworking of sediments by wave actions may only occur during particularly good ice free years. This is evidenced by well preserved ice-push features in relic sequences in the backshore.

Platform Coasts

Platform coastlines are characterized by a complex mixture of low bedrock headlands and outcrops with alternating coarse sediment pockets beaches and near-shore tidal flats. Beach sediments are usually derived from the reworking of local glacial deposits and are predominantly poorly sorted coarse gravels. Boulders are commonly scattered across the backshore, beaches, and shallow intertidal zone.

These coastlines are stable due to the anchoring effects of bedrock headlands, although the beaches themselves are subject to reworking by wave action during open water by the effect of ice-push.

Dissected Coastal Plains

Dissected coastal plains are characterized by a low to moderate sloped backshore plain usually fronted by a continuous beach. The backshore is commonly associated with relic glacial out-wash deposits or a mantel of glacial material over bedrock terraces. The district character of these coastlines is the numerous stream channels which run perpendicular to the shoreline and are often incised into the backshore sediments. Many of the streams end in small lobate deltas and locally supply sediment to the shore zone.

Beaches consist of sand, pebbles, and cobble size material reflecting the local sediment supply. The backshore generally slopes inland from the beach; however, the backshore occasionally ends at the coast in low eroding unconsolidated cliffs. Although these coastlines are often in low energy environments, they are erosional and show considerable reworking of sediments in the shore zone.

Talus Coast

Talus coasts are predominantly high relief backshore cliffs mantled on the seaward face with talus deposits forming a steep ramp of coarse rock debris, and fronted by a narrow to moderate coarse sediment beach. They are generally an erosional shoreline; however, they are common in areas of low shore zone energy.

The predominant erosional force on the cliffs is force action, with resulting talus deposits at their base. Talus slopes are usually close to a stable angle of repose, feeding material to the upper beach environment only during storm events.

Beaches are steep and coarse in nature consisting of poorly sorted pebbles, cobbles, boulders, and rock debris. In areas of higher shore zone energy, well-defined berm and beach ridges are evident. Ice-push ridges, and the resulting hummocky character of the beach face, are common.

Cliff Coast

Cliff coasts are steep rock cliffs with little to no sediment at their base and are occasionally mantled by talus slopes and/or narrow fringing beaches. The angle of

repose of talus slopes is usually unstable and mass wasting into the intertidal zone is common.

Beaches are intermittent along the coastline and are tidal in nature, consisting of cobble, boulder, and rubble material. This is generally an erosional coastline with wave and/or ice action active at the base of cliffs and talus slopes.

Glacier

Glaciers are valley glaciers, mostly from the ice sheets on Devon Island and Bylot Island.

Table A8
Factors Influencing the Potential Influence of Oil Stranded in the Shore Zone

Estuaries	Because of extremely low wave exposures, oil persistence would likely be lengthy for all coastal types that occur within estuaries and embayments.
Barrier Beaches	The complex configuration of low lying barrier beaches and spits backed by lagoons would provide multiple traps to strand oil. Penetration of oil into backshore environments would be easy through tidal inlets and on exposed barriers where overwash is common.
Coastal Flats	Finer sediments would not generally allow deep penetration of oil into beach substrate; however, the fact that the low beach berms would be susceptible to easy overwash may result in oil being stranded above the normal wave limit where persistence would be lengthy. Multiple stream channels along the coast would hinde the stranding of oil if actively flowing; however, they may provide a channel for oil into the backshore during dry periods.
Raised Beaches	The relatively higher wave exposure of these beach environments would allow for a more rapid removal of stranded oil. However, the coarse nature of the sediments would permit deeper percolation of oil into the sediments. Where ice-push features are common, the hummocky nature of the shore zone may allow for the entrapment of oil, conversely ice floes in the shore zone would aid in breaking up weathered oil on the beach.
Platform Coasts	The rocky headlands associated with these coastlines would have a relatively low oil residence time; however, these coastlines are very irregular with multiple pocket beaches often protected by offshore rocks and platforms. Oil trapped in these pocket beach environments could be partially sheltered from all but storm events. In addition, the coarse nature of the sediments associated with these pocket beaches would allow for penetration of stranded oil.
Dissected Plain	These coastlines are slowly erosional in nature and the active reworking of sediments on beaches would limit the residence time of oil. However, the supply of sediment from backshore streams and eroding coastal cliffs may aid in the burial of oil during storm events and hinder the removal of oil with normal wave activity.
Talus Slopes	The steep nature of the beaches along these coastlines would only allow a coating of oil with the tidal range. Oil could be carried higher up the beach during storm events but would be subject to active reworking during the next storm event. The coarse nature of the sediments along these shorelines would allow infiltration of oil into the substrate slightly retarding the natural cleaning.
Cliff Coasts	Oil would adhere to bedrock cliffs for only a short period of time. The coarse sediments on talus slopes and fringing beaches could initially trap oil; however, they are subject to active marine processes and would be quickly cleaned.
Glaciers	Where the valley glaciers meet the coast, the ice covers the intertidal zone and would prevent oil from reaching the substrate. Oil could be incorporated into the ice as a surface coat during freeze-up, but would be released as thaw started in the spring.

3.4.2 Modifications to the Shore Zone Oil Residence Category

In the Lancaster Sound region, the period that oil may be exposed on the shoreline each summer varies considerably from east to west. Ice break-up starts in early June in eastern Lancaster Sound and progresses slowly westward; ice in Viscount Melville Sound does not break up until early September. Ice freeze-up occurs in the reverse order and is much more rapid; by mid- to late October ice concentrations in eastern Lancaster Sound are ≥ 9/10. The open water (≤ 3/10 total ice cover) season ranges from 18 weeks in eastern Lancaster Sound to < 1 week in Viscount Melville Sound (refer to Summary Map 7).

The shore zone oil residence index was modified to account for the variability in potential oil residence periods throughout the region. The Assigned Values for each shore zone element were modified by:

1. adding a numerical value (Modifier) to the Assigned Value to reflect the wave exposure period for each shoreline area and
2. multiplying the Modifier by a Ranking Factor to reflect the relative position of each shore zone element in the ranking scheme.

In general, oil will persist longer in shoreline areas with less wave exposure than in areas with greater wave exposure. The rationale behind the addition of Modifiers was to increase the sensitivity values for shore zone elements with low wave exposure relative to the same shore zone element with a higher wave exposure.

The wave exposure period is based on the median number of weeks of open water (≤ 3/10 total ice cover) for each shoreline area. No attempt was made to adjust the wave exposure periods for protected versus unprotected shorelines. The maximum number of weeks of open water in the study area was divided by three to create high, medium, and low wave exposure periods (refer to Table A9).

The values of the Modifiers attached to the wave exposure periods were chosen to allow comparison between the shoreline area sensitivity values in the Lancaster Sound region and in the Beaufort Sea Atlas. In the Beaufort Sea, the entire shoreline has a high wave exposure period and Modifiers were not added to the Assigned Values. In Lancaster Sound, areas with high wave exposures received a Modifier equal to 0 so that the final Assigned Values for high wave exposure areas in both Lancaster Sound and the Beaufort Sea are comparable. The subsequent Modifier values were then based on the relative range of wave exposure times from high to low.

The Modifiers were added to rather than multiplied by the Assigned Values to ensure that the final Assigned Values are compatible with those for the biological, human use, and marine oil residence categories.

The addition of Modifiers, however, caused a problem as some shore zone elements had their final Assigned Values increased too much relative to other shore zone elements. For example; a cliff (AV = 1) with a low wave exposure period (Modifier = 2) should not be ranked the same with respect to oil persistence as a dissected plain (AV = 3) with a high wave exposure period (Modifier = 0). The solution was to group the shore zone elements by their relative oil persistence and apply a Ranking Factor to the Modifiers (refer to Table A10).

Table A9
Wave Exposure Modifiers

Wave Exposure (# weeks of open water)	Modifier
0-6	2
7-12	1
13-18	0

Table A10
Assigned Values and Ranking Factors of Shore Zone Elements

Shoreline Element	Assigned Value	Modifier x Ranking Factor
Estuary/bay	10	Modifier x 1.5
Barrier beach & lagoon	9	Modifier x 1.5
Coastal flat	7	Modifier x 1
Raised beach	6	Modifier x 1
Platform coast	5	Modifier x 1
Dissected plain	3	Modifier x 0.5
Talus slope	2	Modifier x 0.5
Cliff coast	1	Modifier x 0.5
Glacier	0	Modifier x 0.5

Thus a shoreline area composed of cliff with a low wave exposure period (0 -6 weeks of open water) has a final Assigned Value calculated as follows:

Final Assigned Value = Assigned Value + (Modifier x Ranking Factor)
= AV + (M x RF)
= 1 + (2 x 0.5) = 2

The Final Assigned Value is then inserted into the shore zone oil residence index to calculate the sensitivity value for a given shoreline area.

3.4.3 Application of the Shore Zone Oil Residence

Assessment of shore zone oil residence was complicated by the fact that coastal morphology was mapped in more detail than the scale of the shoreline areas for much of the coastline, while in other areas it was mapped in far less detail due to a lack of available information. For those sections of coastline where detailed information exists, a wide range of elements were often found in one sensitivity area. For example, where estuary and cliff coast occur within one shoreline area the Assigned Values range between 10 and 1. Therefore, the Assigned Values are averaged based on the relative proportion of each coastal type to the overall length of the shoreline in the area. This technique is consistent with that used in the Beaufort Sea Atlas.

The sensitivity value calculation is shown below, using Area 42 as an example. In Area 42, Russell Island, 24% of the shoreline is barrier beach (AV=9), 67% is raised beach (AV=6), and 8% is talus coast (AV=2). The sensitivity value is calculated as follows:

Coastal Type	Assigned Value	Modifier x Ranking Factor	Proportion Shoreline	Weighting Factor	Priority Index
Barrier beach	9	2x1.5	24	1.5	4.32
Raised beach	6	2x1.0	67	1.5	8.04
Talus coast	2	2x0.5	8	1.5	0.36
			Sensitivity for Area 42 = 12.72		

The final sensitivity value is a compromise between the dominant coastal type, which has a moderate sensitivity, and both the higher and lower sensitivity types which are less common in the area. The coastal types for each shoreline area are mapped on the operational maps showing the physical environment.

3.5 Marine Oil Exposure Category

The marine oil exposure index was first developed for the Beaufort Sea Atlas. The objective was to select assigned values for the marine category that would approximately correspond to values in the shore zone oil residence index, that is AV5 (marine) = AV5 (shore zone). However, it is difficult to make direct comparisons between the assigned values and final sensitivity values as the two oil indices are based on very different physical, spatial, and temporal parameters.

In the marine oil exposure index, ice is the dominant physical parameter controlling the residence time for oil. In the shore zone oil residence index, the fate of oil is dependent on the combined effects of coastal

controlling the residence time for oil. In the shore zone oil residence index, the fate of oil is dependent on the combined effects of coastal morphology, stability, substrate, and the wave exposure period. Thus oil persistence and duration for offshore and shoreline areas are significantly different based on the physical factors that affect the fate of oil. The key differences between the concepts of marine and shore zone oil residence are outlined below:

Point of Comparison	Marine Oil Exposure	Shore Zone Oil Residence
Period of maximum persistence and/or exposure	early winter to spring (Oct to May)	spring to late summer (May to Oct)
Key physical factors	ice type ice cover ice porosity leads	wave exposure coastal morphology coastal stability substrate
Oil mobility	extensive	limited

The behavior of oil offshore is a complex process that depends on a number of competing mechanisms. Oil may be exposed as pools on the ice surface through vertical migration as early as June or by ice ablation in early July (Norcor, 1975; Dickins and Buist, 1980). Oil can be transferred to the marine environment at any time by ice break-up or lead formation (Norcor, 1977).

Oil spilled in a broken ice environment is prevented from spreading and tends to remain concentrated in local areas within slush and brash ice between the thicker floes (Buist and Bjerkelund, 1986). In contrast, oil spilled in a winter landfast ice environment is quickly incorporated within the growing ice sheet, contained within a local area, and isolated from the marine environment until spring (Dickins and Buist, 1980).

As the ice concentration approaches an open water condition (< 3/10 ice) the oil spreads rapidly into thin films. The oil exposure period is minimal during the open water period because of the potential for large daily motions in the order of tens of kilometres and subsequent decrease in oil concentrations. The presence of ice either as evenly distributed floes or as well defined ice edges (e.g., leads, lagoons, polynya) will act to restrict oil movement and significantly increase the potential oil exposure time within a localized area. However, the opportunity still exists for large west-east movements of oil in the recurring shore leads along the coasts of Lancaster Sound.

3.5.1 Elements in the Marine Oil Exposure Category

There are four ice types within the Lancaster Sound region: open water, flaw leads, pack ice, and fast ice. Icebergs are not considered here as separate features because they have no bearing on oil spill response. The offshore sensitivity areas were chosen to correspond to the median locations of these ice zone boundaries for four seasons: early May to early August, early August to early October, early October to late December, and January to early May (refer to Summary Maps 4, 6 and 7). Table A11 discusses the seasonal ice regimes.

The marine oil exposure index and the associated sensitivity values were developed separately for each season rather than for each ice type. The dates used to separate the seasons were chosen on the basis of the median ice conditions and biological activity.

Table A11
Seasonal Ice Regimes

Early Winter (October 8 to December 31)

Freeze-up occurs as a series of discrete events at given locations which are influenced by the current patterns (refer to Summary Map 9). By late September the ice cover has consolidated west of Barrow Strait while the ice in Lancaster Sound remains unconsolidated with numerous leads. Consolidation of the ice cover east of Barrow Strait depends on the location and timing of the ice edge formation (refer to Summary Map 4 and Figure 1). Fast ice is established by November in the inlets leading off Lancaster Sound and along the shoreline, closing the major pathways for oil motion over much of the region.

Baffin Bay between October and December. Some old ice from northern Baffin Bay may also drift southwestward around Devon Island into Lancaster Sound, entering as far west as 86°W. This flow of old ice is transient and mostly occurs in November and early December (Lapp et al., 1986). No old ice originates from the channels south of Lancaster Sound.

Winter (January 1 to May 9)

During the winter, ice in Lancaster Sound is predominantly mobile, first-year ice. There is a slow eastward drift of ice into Baffin Bay (refer to Summary Map 5) which tends to reduce the concentration of old ice throughout the winter.

The ice edge in Lancaster Sound typically establishes its position by the end of March (refer to Figure 1). Before the ice edge forms, a number of temporary ice edges may form and reform at any of the ice edge positions (refer to Summary Map 4). Once the ice edge forms, the ice cover behind the ice edge is relatively immobile and compact, although small leads are present in the ice cover. Old ice from Viscount Melville Sound and Wellington Channel can no longer move east into Lancaster Sound.

Throughout the winter, the ice sheet west of Barrow Strait remains stable as the small islands, Young, Lowther, and Griffith Islands, restrict ice movement. Ice in Lancaster Sound will only consolidate if the ice edge establishes at its most eastern location at the entrance to the Sound.

Several characteristic lead patterns develop in Lancaster Sound and in Prince Regent Inlet depending on the location of the ice edge (refer to Regional Maps 1 West and 1 East). These recurring leads are pathways for oil motion throughout the winter over most of the region east of the ice edge. Several lead patterns, however, occur independently of the ice edge. These are the leads associated with the fractured ice in Prince Regent Inlet, the shear zone along the northeast and east coast of Bylot Island, and the fractured ice zone extending around the southeast coast of Devon Island to Cape Warrender.

Multi-year ice (ice which has survived for a minimum of two winters) concentrations up to 5/10 are found in western Viscount Melville Sound and Byam Martin Channel (refer to Summary Map 4). Multi-year ice (commonly known as old ice) may also occur in eastern Viscount Melville Sound and Byam and Austin Channels when the old ice clears out of Byam Martin Channel in the summer.

Spring and Early Summer (May 10 to August 6)

Ice break-up occurs in steps (refer to Summary Map 6 and Figures 11, 12, and 13). The timing of ice break-up in Lancaster Sound and the adjacent channels is controlled by the location of the winter ice edge as well as by conditions in Baffin Bay. Lancaster Sound is usually open by mid-to late June. When the ice edge is located at Prince Leopold Island the flaw lead expands in May and ice break-up occurs in early June (refer to Figure 11). Break-up in the inlets is usually delayed until the end of July or early August while the fast ice deteriorates. Ice in Navy Board Inlet, Admiralty Inlet, Prince Regent Inlet, and Peel Sound clears every summer.

Ice in eastern Barrow Strait breaks up and clears into Lancaster Sound during July. West of Resolute Bay, however, ice conditions are considerably more severe. Break-up west of Resolute Bay is delayed by approximately three-to-four weeks from that in Lancaster Sound. Extreme years may see no break-up in the western part of the study area.

Late Summer and Fall (August 7 to October 7)

There is a gradual progression of ice break-up between Resolute Bay and Bridport Inlet between early August and early September. The maximum open water extent occurs in mid-September (refer to Summary Maps 6 and 7). The median number of weeks of open water varies from 18 weeks in eastern Lancaster Sound to less than one week in Viscount Melville Sound.

Old ice clears from western Viscount Melville Sound and Sverdrup Basin through Lancaster Sound into Baffin Bay throughout the summer. In summers that the multi-year ice clears from Byam Martin Channel, old ice may be found in Austin and Byam Channels through the summer into the winter months.

Icebergs drift into eastern Lancaster Sound from northern Baffin Bay with the Baffin Bay Intrusive Current (refer to Summary Map 9). Icebergs also calve off the glaciers of Devon and Bylot Islands. The majority of icebergs (over 80%) do not penetrate the Sound east of 84°W. While icebergs present a major hazard to shipping, they do not represent a unique ice condition with respect to oil behavior in ice.

New ice starts to grow along southern Bathurst Island in mid-September. By early October the ice cover has advanced west to Prince Leopold Island.

3.5.2 Application of the Marine Oil Exposure Category

The marine oil exposure index was modified slightly from that used in the Beaufort Sea Atlas to reflect the greater variability in ice regimes and ice clearing patterns in the Lancaster Sound region than in the Beaufort Sea. Each offshore area in the Lancaster Sound region has an assigned value based on the estimated oil exposure periods associated with the predominant ice conditions.

For example, oil spilled in pack ice in Lancaster Sound (Offshore Area 405) in November may have an exposure time of 1 week to 3 months as the ice is mobile with numerous leads present. However, oil spilled in pack ice in Viscount Melville Sound (Offshore Area 407) in November will have an exposure time of about 2 weeks as the oil will be frozen into the new ice as it is rapidly growing and consolidating.

Therefore, rather than attempting to give each ice element an assigned value and trying to modify the assigned values for the varying freeze-up and break-up dates throughout the region, each offshore area was assigned a value based on the ice conditions that prevail and the estimated oil exposure times.

Table A12 shows the estimated oil exposure times and their assigned values for the Lancaster Sound region.

Table A12

Oil Exposure Time	Assigned Value
days to 2 weeks	3
days to 1 month	5
days to 2 months	6
days to 4 months	7

The oil exposure period is based on the potential for direct oil exposure. Direct oil exposure includes situations where oil is present as exposed slicks or pools whereas indirect oil exposure includes cases where oil is present as a distinct lens or layer encapsulated within a growing ice sheet. Although oil encapsulated within the ice is still present in the marine environment, it is physically isolated from most biological and human activities (the exception is seals).

Assigned values were derived following the same rationale that was used in the Beaufort Sea Atlas. The maximum value in the marine oil index was set at 7 for the worst case oil exposure period (up to 4 months for offshore areas where the predominant ice element is polynya and leads). This assigned value for the worst case situation was determined by considering elements within the shore zone oil residence category that most closely approximate the same oil residence period. The subsequent assigned values were then based on the relative range of direct oil exposure times.

Tables A13 to A16 list the predominant ice regime, the estimated oil exposure time, the assigned value (AV), weighting factor (WF), and priority index (PI) for each offshore area by season. The final priority index (PI) was calculated as follows:

Priority Index (PI) = Assigned Value (AV) x Weighting Factor (WF)

Both the marine and the shore zone oil residence categories received a Weighting Factor of 1.50.

Table A13
Marine Oil Exposure Category
May 10 to August 6

Offshore Area	Oil Exposure (# of weeks)	Assigned Value	Weighting Factor	Priority Index
201 - 204	days - 1 week	3	1.50	4.50
205	3-4 weeks	5	1.50	7.50
206 - 207	days - 1 week	3	1.50	4.50
208	4-5 weeks	5	1.50	7.50
209 -210	1 month	5	1.50	7.50
211	1-4 weeks	5	1.50	7.50
212	1 month	5	1.50	7.50

Table A14
Marine Oil Exposure Category
August 7 to October 7

Offshore Area	Oil Exposure (# of weeks)	Assigned Value	Weighting Factor	Priority Index
301 - 310	days - 1 week	3	1.50	4.50
311 - 313	days - 2 weeks	3	1.50	4.50
314	days - 3 weeks	5	1.50	7.50
315	2 weeks	3	1.50	4.50
316	4-7 weeks	6	1.50	9.00
317	8-9 weeks	6	1.50	9.00
318	5-7 weeks	6	1.50	9.00
319	7-8 weeks	6	1.50	9.00

Table A15
Marine Oil Exposure Category
October 8 to December 31

Offshore Area	Oil Exposure (# of weeks)	Assigned Value	Weighting Factor	Priority Index
401, 403	1-4 weeks	5	1.50	7.50
402, 404	days - 1 week	3	1.50	4.50
405 - 406	1 week - 3 months	7	1.50	10.50
407	2 weeks	3	1.50	4.50

Table A16
Marine Oil Exposure Category
January 1 to May 9

Offshore Area	Oil Exposure (# of weeks)	Assigned Value	Weighting Factor	Priority Index
501,510	days - 1 week	3	1.50	4.50
502, 505	1-4 weeks	5	1.50	7.50
503, 507, 511	days	3	1.50	4.50
504, 506, 509	days - 4 months	7	1.50	10.50
508	days - 1 month	5	1.50	7.50

4.0 APPLICATION OF THE ENVIRONMENTAL SENSITIVITY RANKING SYSTEM

The following section describes the application of the sensitivity ranking system to shoreline and offshore areas and the degree of environmental sensitivity based on the relative rankings. Actual sensitivity values for all areas are provided in Section 5.0.

4.1 Definition of Areas for Sensitivity Ranking

To facilitate examination of area-specific differences in the sensitivity of resources to marine oil spills, the Lancaster Sound region was divided into a number of shoreline and offshore areas. The shoreline was divided into 108 areas approximately 30 km in length, which was determined by a relative calculation from that used in the Beaufort Sea Atlas and was based largely on shoreline type and the presence of biological resources. These areas extend approximately 1 km from the shoreline or from the offshore boundary of areas that are exposed during low tides. The backshore limit varies depending on the terrain. Delineation of the shoreline and the environmental information for each of these areas is shown in Operational Maps 1 to 34. Sensitivity of the shoreline was determined for the spring, summer and fall (May 10 - October 7), which corresponds to the maximum time period when oil could be exposed in an unfrozen state along the shore.

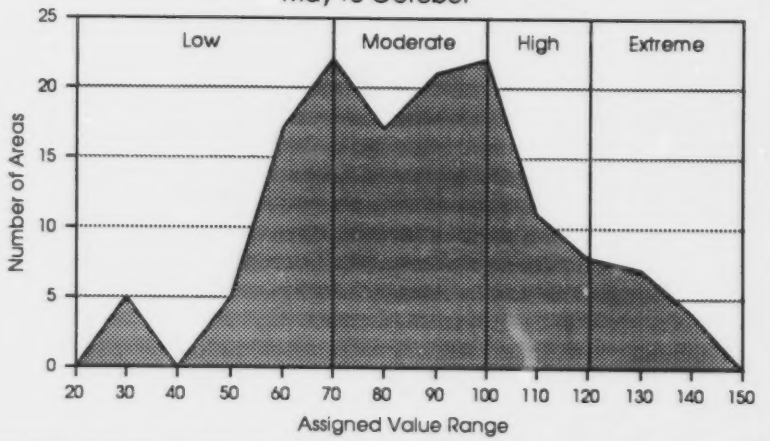
The most important elements controlling the timing, duration and physical location of oil offshore are the ice and open water regimes. There are four regimes within the Lancaster Sound region: open water, polynyas and leads, pack ice, and fast ice. The offshore waters extending from the boundaries of the shoreline areas were therefore divided into sensitivity zones that correspond to the average location of these ice zone boundaries during spring/early summer, summer, early winter and late winter. This translated into 12 offshore areas for the spring and early summer period (May 10 - August 6), 19 areas for the summer period (August 7 to October 7), 7 areas for the early winter period (October 8 - December 31) and 11 areas for the winter period (January 1 - May 9).

Sensitivity rankings for the shoreline were combined with the spring/fall offshore rankings to allow comparisons between areas and establish priorities for cleanup in the event that a marine oil spill occurs during early spring to late fall. Sensitivity rankings for the offshore areas during winter were considered separately because in almost all cases oil spilled offshore during this time of year would not reach the shoreline until the following summer due to the barrier of landfast ice. In addition, the lack of available data on biological resources in the offshore during winter have caused the offshore areas to be ranked low relative to the shoreline and therefore precluded any meaningful comparisons to be made between these areas.

4.2 Definition of Low, Moderate, High, and Extreme Categories

Ranking of the shoreline and offshore areas was simplified to four degrees of sensitivity (LOW, MODERATE, HIGH, EXTREME) to allow quick determination of their relative sensitivity to an oil spill. Distributions of all Sensitivity Rankings for the shoreline and offshore (spring/fall) and the offshore (winter) were constructed to assist in delineation of the four categories. An example of the distribution for the spring/fall period is shown in Figure A.1.

Figure A.1 Distribution of Sensitivity Rankings
May to October



The rankings for the shoreline and offshore areas during early spring/fall ranged from 28.3 to 145.8, while the rankings for the offshore during early/late winter ranged from 4.5 to 31. Based on the distribution of the sensitivity values, the low, moderate, high, and extreme categories were defined as follows:

1. Shoreline and offshore areas (spring and summer and fall):

LOW	=	< 70
MODERATE	=	70 - 100
HIGH	=	100 - 120
EXTREME	=	> 120

2. Offshore area (early winter and winter):

LOW	=	< 15
MODERATE	=	15 - 29
HIGH	=	30 - 30.5
EXTREME	=	≥ 31

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SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
1	1	Beluga Whales	16	5	0.5	4	1.75	7		
		Walrus	15	5	1	7	1.75	12.25		
		Proposed National Park				3	1.5	4.5		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5	1.5	7.5	101.2	HIGH
2	1	Beluga Whales	16	5	0.5	4	1.75	7		
		Walrus	16	5	1	7	1.75	12.25		
		Harp Seals	17	5	0.5	4	1.75	7		
		Bearded Seals	17	5	1	8	1.75	14		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Proposed National Park				3	1.5	4.5		
		Shoreline Oil Residence				5.9	1.5	8.85	125.3	EXTREME

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
3	1	Archaeological Sites (2)				6	1.5	9		
		Walrus	15	5	1	7	1.75	12.25		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Proposed National Park				3	1.5	4.5		
		Shoreline Oil Residence				5.63	1.5	8.45	121.7	EXTREME
4	1	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (2)				6	1.5	9		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Walrus	16	5	1	7	1.75	12.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				2.17	1.5	3.25	116.5	HIGH

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
5	1,2	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (43)				7	1.5	10.5		
		Important to Residents				8	2	16		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Walrus	15	5	1	7	1.75	12.25		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.7	1.5	7.05	**137.8**	**EXTREME**
6	2	Proposed National Park				3	1.5	4.5		
		Archaeological Sites				7	1.5	10.5		
		Important to Residents				8	2	16		
		Beluga Whales	16	5	0.25	2	1.75	3.5		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Walrus	16	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.25	2	1.75	3.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Geese	17	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				2.57	1.5	3.85	**122.4**	**EXTREME**

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
7	2	Proposed National Park				3	2	6		
		Archaeological Sites (9)				6	2	12		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Walrus	15	5	0.5	3	1.75	5.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				3.44	1.5	5.16	98.4	MODERATE
8	2,3	Archaeological Sites (7)				6	1.5	9		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.43	1.5	6.64	83.9	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
9	3	Archaeological Sites (16)				7	1.5	10.5		
		Beluga Whales	16	5	0.75	5	1.75	8.75		
		Polar Bears	18	5	0.75	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.02	1.5	7.53	95	MODERATE
10	3	Archaeological Sites (16)				6	1.5	9		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	0.75	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.16	1.5	7.74	90.2	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
11	3,4	Archaeological Sites (17)				4	1.5	6		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	0.75	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.39	1.5	8.09	**80.6**	**MODERATE**
12	4	Archaeological Sites (50)				7	1.5	10.5		
		Walrus	15	5	0.5	3	1.75	5.25		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	1	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.34	1.5	6.51	**101**	**HIGH**

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
13	4	Archaeological Sites (27)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	1	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.16	1.5	7.74	**100.5**	**HIGH**
14	4	Archaeological Sites (23)				7	1.5	10.5		
		Important to Residents				8	2	16		
		Walrus	15	5	0.5	3	1.75	5.25		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Polar Bears	18	5	1	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.49	1.5	6.74	**119**	**HIGH**

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
15	4,5	Archaeological Sites (16)				7	1.5	10.5		
		Polar Bears	18	5	1	8	1.75	14		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	5	0.5	3	1.75	5.25		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.99	1.5	8.99	**103.5**	**HIGH**
16	5	Archaeological Sites (16)				7	1.5	10.5		
		Walrus	15	5	0.5	3	1.75	5.25		
		Polar Bears	18	5	1	8	1.75	14		
		Geese	17	2	0.75	2	1.75	3.5		
		Alcids	22	5	0.75	8	1.75	14		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				6.51	1.5	9.77	**102.5**	**HIGH**

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
17	5	Archaeological Sites (1)				6	1.5	9		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				0.99	1.5	1.48	73.5	MODERATE
18	5	Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				7.02	1.5	10.53	71.8	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
19	5,6	Archaeological Sites (13)				6	1.5	9		
		Arctic Cod	13.5	5	1	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.86	1.5	8.79	116.3	HIGH
20	6	Archaeological Sites (18)				7	1.5	10.5		
		Community of Resolute				10	2	20		
		Beluga Whales	16	5	0.25	2	1.75	3.5		
		Arctic Cod	14.5	5	1	7	1.75	12.25		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Gulls	19	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Shoreline Oil Residence				9.52	1.5	14.28	131.3	EXTREME

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
21	6	Archaeological Sites (35)				7	1.5	10.5		
		Beluga Whales	16	5		0	1.75	0		
		Arctic Cod	14.5	5		0	1.75	0		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				7.82	1.5	11.73	**84**	**MODERATE**
22	6	Archaeological Sites (1)				6	1.5	9		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Alcids	22	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				8.58	1.5	12.87	**92.1**	**MODERATE**

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
23	6	Archaeological Sites (7)				6	1.5	9		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				11.13	1.5	16.69	78.2	MODERATE
24	6	Archaeological Sites (2)				6	1.5	9		
		Highly Important to Res.				9	2	18		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				8	1.5	12	79.2	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
25	6	Highly Important to Res.				9	2	18		
		Gulls	18.5	5	0.5	7	1.75	12.25		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				7.2	1.5	10.8	77.8	MODERATE
26	7	Archaeological Sites (10)				7	1.5	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.16	1.5	13.74	64.5	LOW

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
27	7	Archaeological Sites (20)				7	1.5	10.5		
		Gulls	18.5	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				11.07	1.5	16.6	70.9	MODERATE
28	7	Archaeological Sites (19)				6	1.5	9		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				11.24	1.5	16.86	66.1	LOW

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
29	7,9,10	Archaeological Sites (57)				7	1.5	10.5		
		Walrus	15	5	0.5	3	1.75	5.25		
		Gulls	18.5	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	[illegible]	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				7.36	1.5	11.04	68.8	LOW
30	7	Archaeological Sites (17)				7	1.5	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.64	1.5	8.46	59.2	LOW

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
31	7,9,10	Archaeological Sites (60)				7	1.5	10.5		
		Walrus	15	5	0.25	2	1.75	3.5		
		Bearded Seals	17	5	0.5	4	1.75	7		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.12	1.5	13.68	66.2	LOW
32	7,9,10	Archaeological Sites (13)				7	1.5	10.5		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.94	1.5	14.91	70.9	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
33	9,10	Ringed Seals	17	5	1	8	1.75	14		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				11.15	1.5	16.73	65.7	LOW
34	8	Archaeological Sites (5)				6	1.5	9		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.		5		9	2	18		
		Shoreline Oil Residence				9.18	1.5	13.77	75.8	MODERATE

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
35	8	Highly Important to Res.				9	2	18		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.64	1.5	14.46	67.5	LOW
36	8	Highly Important to Res.				9	2	18		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.6	1.5	14.4	67.4	LOW

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
37	10	Archaeological Sites (21)				7	1.5	10.5		
		National Wildlife Area				5	1.5	7.5		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				0.69	1.5	1.03	54	LOW
38	10	Important to Residents				8	2	16		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9	1.5	13.5	64.5	LOW

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
39	10	Archaeological Sites (9)				6	1.5	9		
		Gulls	18.5	5	0.5	4	1.75	7		
		Geese	17	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.62	1.5	8.43	68.2	LOW
40	11	Archaeological Sites (3)				6	1.5	9		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				10.16	1.5	15.24	59.2	LOW

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
41	11,12	Archaeological Sites (12)				7	1.5	10.5		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				10.54	1.5	15.81	64.8	LOW
42	11,12	Archaeological Sites (9)				6	1.5	9		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				8.56	1.5	12.84	69.1	LOW

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
43	12	Archaeological Sites (1)				6	1.5	9		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.24	1.5	13.86	70.1	MODERATE
44	12	Archaeological Sites (43)				7	1.5	10.5		
		Ringed Seals	17	5	1	8	1.75	14		
		Bearded Seals	17	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.25	1	1.75	1.75		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5			0	1.75	0		
		Greatest Importance to Res.				10	2	20		
		Shoreline Oil Residence				8.66	1.5	12.99	97.7	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
45	12,13	Archaeological Sites (7)				6	1.5	9		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				8.03	1.5	12.05	**93.3**	**MODERATE**
46	13	Archaeological Sites (94)				7	1.5	10.5		
		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				6.8	1.5	10.2	**91.2**	**MODERATE**

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
47	13	Archaeological Sites (11)				7	1.5	10.5		
		Alcids	22	5	0.5	5	1.75	8.75		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				6	1.5	9	70.2	MODERATE
48	13	Archaeological Sites (9)				6	1.5	9		
		Beluga Whales	16	5	0.25	2	1.75	3.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				10.27	1.5	15.41	87.7	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
49	13	Archaeological Sites (1)				6	1.5	9		
		Beluga Whales	16	5	0.25	2	1.75	3.5		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Gulls	18.5	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				5.56	1.5	8.34	91.1	MODERATE
50	13,14	Archaeological Sites (2)				6	1.5	9		
		Beluga Whales	16	5	0.25	2	1.75	3.5		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Gulls	18.5	5	0.5	4	1.75	7		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5			0	1.75	0		
		Importance to Residents				8	2	16		
		Shoreline Oil Residence				10.39	1.5	15.59	100.1	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
51	14	Arctic Char	14.5	5	1	7	1.75	12.25		
		Gulls	18.5	5	0.5	4	1.75	7		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.04	1.5	13.56	**74.8**	**MODERATE**
52	14	Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5	1.5	7.5	**70.5**	**MODERATE**

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
53	14	Proposed Bird Sanctuary				3	1.5	4.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.25	1	1.75	1.75		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				1.74	1.5	2.61	**91.1**	**MODERATE**
54	14	Archaeological Sites (5)				6	1.5	9		
		Beluga Whales	16	5		0	1.75	0		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	5	0.75	8	1.75	14		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	0.75	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Importance to Residents				8	2	16		
		Shoreline Oil Residence				3.54	1.5	5.31	**105.6**	**HIGH**

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
55	14,15	Archaeological Sites (1)				6	1.5	9		
		Alcids	22	5	0.75	8	1.75	14		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	0.75	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.44	1.5	6.66	85.7	MODERATE
56	15	Archaeological Sites (4)				6	1.5	9		
		Gulls	18.5	5	0.5	4	1.75	7		
		Alcids	22	5	0.5	5	1.75	8.75		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.17	1.5	7.75	78	MODERATE

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
57	15,16	Archaeological Sites (6)				6	1.5	9		
		Alcids	22	5	0.5	5	1.75	8.75		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.91	1.5	7.37	**74.1**	**MODERATE**
58	16	Archaeological Sites (13)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Arctic Cod	13.5	5	1	6	1.75	10.5		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Gulls	18.5	5	0.5	4	1.75	7		
		Geese	17	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				11.12	1.5	16.68	**137.9**	**EXTREME**

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
59	16	Archaeological Sites (38)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Arctic Char	13.5	5	1	6	1.75	10.5		
		Arctic Cod	14.5	5	1	7	1.75	12.25		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Gulls	18.5	5	0.5	4	1.75	7		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Greatest Importance to Res.				10	2	20		
		Shoreline Oil Residence				13	1.5	19.5	**135.8**	**EXTREME**
60	16	Archaeological Sites (24)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Arctic Cod	13.5	5	1	6	1.75	10.5		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				10.72	1.5	16.08	**130.3**	**EXTREME**

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
61	16,17	Archaeological Sites (26)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				11.64	1.5	17.46	89.2	MODERATE
62	17	Archaeological Sites (60)				7	1.5	10.5		
		Beluga Whales	16	5	0.5	4	1.75	7		
		Fulmars	17	5	0.5	4	1.75	7		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.5	2	1.75	3.5		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				9.46	1.5	14.19	91.2	MODERATE

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
63	18	Beluga Whales		5	0.5	0	1.75	0		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				8.23	1.5	12.35	75.6	MODERATE
64	18	Beluga Whales		5	0.5	0	1.75	0		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				10.52	1.5	15.78	79	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
65	18,19	Important to Residents								
		Alcids	22	2	0.5	8	2	16		
		Fulmars	20	0	0	2	1.75	3.5		
		Sea Ducks	19	2	0.75	0	1.75	0		
		Gulls	18.5	2	0.5	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	2	1.75	3.5		
		Bearded Seals	17	2	0.75	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	3	1.75	5.25		
		Beluga Whales	16	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	1	1.75	1.75		
		Arctic Char	14.5	2	1	0	1.75	0		
		Arctic Cod	13.5	2	1	3	1.75	5.25		
		Shoreline Oil Residence				2	1.75	3.5		
						9	1.5	13.5	78.5	MODERATE
66	19	Important to Residents								
		Alcids	22	2	0.5	8	2	16		
		Fulmars	20	0	0	2	1.75	3.5		
		Sea Ducks	19	2	0.75	0	1.75	0		
		Gulls	18.5	2	0.5	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	2	1.75	3.5		
		Bearded Seals	17	2	0.75	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	3	1.75	5.25		
		Beluga Whales	16	2	0.5	2	1.75	3.5		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	1	1.75	1.75		
		Arctic Char	14.5	2	1	0	1.75	0		
		Arctic Cod	13.5	2	1	3	1.75	5.25		
		Shoreline Oil Residence				2	1.75	3.5		
						6.92	1.5	10.38	75.4	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
67	19,20	Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				7.01	1.5	10.52	59.5	LOW
68	20	Important to Residents				8	2	16		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				2.55	1.5	3.83	68.8	LOW

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
69	20,21	Important to Residents				8	2	16		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				3.58	1.5	5.37	80.9	MODERATE
70	21,26	Important to Residents				8	2	16		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.58	1.5	8.37	83.9	MODERATE

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
71	21,26	Narwhals		5		0	1.75	0		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				4.9	1.5	7.35	91.8	MODERATE
72	21,22	Narwhals		5		0	1.75	0		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.43	1.5	3.64	75.9	MODERATE

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
73	22,24	Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.11	1.5	4.66	94.4	MODERATE
74	22,23,24	Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.62	1.5	8.43	98.2	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
75	23,24	Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.76	1.5	8.64	89.6	MODERATE
76	23,24,25	Archaeological Sites (6)				6	1.5	9		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Shoreline Oil Residence				4.6	1.5	6.9	98.9	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
77	22,23,24	Archaeological Sites (1)				6	1.5	9		
	25	Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.66	1.5	8.49	98.5	MODERATE
78	22,25	Archaeological Sites (2)				6	1.5	9		
		Greatest Importance to Res.				10	2	20		
		Community of Arctic Bay				10	2	20		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				2.91	1.5	4.37	116.4	HIGH

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
79	22,25	Highly Important to Res.				9	2	18		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.35	1.5	6.53	80.5	MODERATE
80	21,22,25 26	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (4)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.42	1.5	3.63	103.4	HIGH

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
81	21,26	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (1)				6	1.5	9		
		Narwhals	16	5		0	1.75	0		
		Fulmars	20	5	1	9	1.75	15.75		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.68	1.5	5.52	101.8	HIGH
82	26	Proposed National Park				3	1.5	4.5		
		Highly Important to Res.				9	2	18		
		Narwhals	16	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				5.08	1.5	7.62	108.9	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
83	26,27	Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.75	2	1.75	3.5		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				3.43	1.5	5.14	116.6	HIGH
84	27	Proposed National Park				3	1.5	4.5		
		Highly Important to Res.				9	2	18		
		Narwhals	16	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				4.24	1.5	6.36	102.4	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
85	27,28	Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	0.5	4	1.75	7		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				1.56	1.5	2.34	86.1	MODERATE
86	28	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (5)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Geese	17	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.92	1.5	8.88	115.6	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
87	28	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (4)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.42	1.5	3.63	106.9	HIGH
88	28,29	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (2)		5		6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.56	1.5	3.84	103.6	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
89	29	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (7)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.7	1.5	5.55	108.8	HIGH
90	29	Proposed National Park				3	1.5	4.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.38	1.5	3.57	78.6	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
91	29,30,31	Proposed National Park								
		Archaeological Sites (19)				3	1.5	4.5		
		Arctic Char	14.5	5	1	7	1.5	10.5		
		Alcids	22	2	0.75	7	1.75	12.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	3	1.75	5.25		
		Ringed Seals	17	2	1	2	1.75	3.5		
		Bearded Seals	17	2	0.5	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	2	1.75	3.5		
		Bowhead Whales	17	0	0	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	0	1.75	0		
		Walrus	15	0	0	1	1.75	1.75		
		Arctic Cod	13.5	2	1	0	1.75	0		
		Highly Important to Res.				2	1.75	3.5		
		Shoreline Oil Residence				9	2	18		
						1.56	1.5	2.34	94.8	MODERATE
92	30,31	Proposed National Park								
		Archaeological Sites (2)				3	1.5	4.5		
		Highly Important to Res.				6	1.5	9		
		Arctic Char	14.5	5	1	9	2	18		
		Alcids	22	2	0.75	7	1.75	12.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	3	1.75	5.25		
		Ringed Seals	17	2	1	2	1.75	3.5		
		Bearded Seals	17	2	0.5	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	2	1.75	3.5		
		Bowhead Whales	17	0	0	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	0	1.75	0		
		Walrus	15	2	1	1	1.75	1.75		
		Arctic Cod	13.5			3	1.75	5.25		
		Shoreline Oil Residence				0	1.75	0		
						1.42	1.5	2.13	94.9	MODERATE

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
93	31	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (6)				6	1.5	9		
		Community of Pond Inlet				10	2	20		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Shoreline Oil Residence				4.89	1.5	7.33	132.6	EXTREME
94	31,34	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (2)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				1.9	1.5	2.85	111.3	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
95	31,34	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (2)				6	1.5	9		
		Narwhals	16	5	0.5	4	1.75	7		
		Arctic Char	14.5	5	1	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.62	1.5	5.43	112.2	HIGH
96	32,34	Proposed National Park				3	1.5	4.5		
		Archaeological Sites (4)				6	1.5	9		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.86	1.5	4.29	116.8	HIGH

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
97	32,34	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.5	4	1.75	7		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				1.8	1.5	2.7	94	MODERATE
98	28,31,32	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.13	1.5	7.7	104.2	HIGH

SHORELINE SENSITIVITY RANKINGS — May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
99	27,28	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Geese	17	5	0.75	6	1.75	10.5		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				7.18	1.5	10.77	109	HIGH
100	27	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Archaeological Sites (1)				6	1.5	9		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	2	0.75	3	1.75	5.25		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.95	1.5	5.92	106.2	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
101	27	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Archaeological Sites (1)				6	1.5	9		
		Narwhals	16	3	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Gulls	18.5	5	1	8	1.75	14		
		Sea Ducks	19	5	0.75	6	2	12		
		Alcids	22	2	1	4	1.75	7		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				2.82	1.5	4.23	127	EXTREME
102	27	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Gulls	18.5	5	1	8	1.75	14		
		Sea Ducks	19	5	0.75	6	2	12		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				0.84	1.5	1.26	116.3	HIGH

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
103	27,33	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Gulls	18.5	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Shoreline Oil Residence				1.63	1.5	2.44	115.9	HIGH
104	33	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.53	1.5	5.29	143.8	EXTREME

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
105	32,33	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				5.62	1.5	8.43	145.2	EXTREME
106	32,33	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	1	4	1.75	7		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				4.53	1.5	6.79	124.3	EXTREME

SHORELINE SENSITIVITY RANKINGS

May 10 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
107	32,34	Proposed National Park				3	1.5	4.5		
		Migratory Bird Sanctuary				5	1.5	7.5		
		Archaeological Sites (1)				6	1.5	9		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Harp Seals	17	5	0.5	4	1.75	7		
		Gulls	18.5	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Sea Ducks	19	5	0.75	6	1.75	10.5		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Shoreline Oil Residence				3.02	1.5	4.53	143.3	EXTREME
108	34	Proposed National Park				3	1.5	4.5		
		Alcids	22	2	1	4	1.75	7		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	2	0.75	3	1.75	5.25		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	2	0.75	2	1.75	3.5		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.5	2	1.75	3.5		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	2	0.75	2	1.75	3.5		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	2	1	3	1.75	5.25		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Shoreline Oil Residence				2.31	1.5	3.46	87	MODERATE

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
201		Narwhals	16	5	1	7	1.75	12.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	2	1	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	81.5	MODERATE
202		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Harp Seals	17	5	0.25	2	1.75	3.5		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.75	2	1.75	3.5		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Marine Oil Residence				3	1.5	4.5	123.2	EXTREME

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
203		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Beluga Whales	16	5	1	7	1.75	12.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Polar Bears	18	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	5	0.25	2	1.75	3.5		
		Walrus	15	2	1	3	1.75	5.25		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	131.5	EXTREME
204		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Beluga Whales	16	5	1	7	1.75	12.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Polar Bears	18	5	1	8	1.75	14		
		Harp Seals	17	5	0.25	2	1.75	3.5		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Walrus	15	2	0.75	2	1.75	3.5		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Marine Oil Residence				3	1.5	4.5	145.8	EXTREME

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
205		Proposed National Park				3	1.5	4.5		
		Greatest Importance to Res.				10	2	20		
		Alcids	22	2	0.25	1	1.75	1.75		
		Fulmars	20	2	0.25	1	1.75	1.75		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.25	1	1.75	1.75		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.25	1	1.75	1.75		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	5	0.25	2	1.75	3.5		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				5	1.5	7.5	61.7	LOW
206		Proposed National Park				3	1.5	4.5		
		Important to Residents				8	2	16		
		Beluga Whales	16	5	1	7	1.75	12.25		
		Polar Bears	18	5	1	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	5	0.75	8	1.75	14		
		Sea Ducks	19	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Narwhals	16	2	1	3	1.75	5.25		
		Walrus	15	2	0.75	2	1.75	3.5		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	121.2	EXTREME

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
207		Proposed National Park				3	1.5	4.5		
		Proposed Bird Sanctuary				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Alcids	22	5	0.75	8	1.75	14		
		Sea Ducks	19	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Marine Oil Residence				3	1.5	4.5	**124.2**	**EXTREME**
208		Proposed National Park				3	1.5	4.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Alcids	22	2	0.5	2	1.75	3.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.25	1	1.75	1.75		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	5	0.25	2	1.75	3.5		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				5	1.5	7.5	**77.5**	**MODERATE**

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
209		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Important to Residents				8	2	16		
		Marine Oil Residence				5	1.5	7.5	**60.2**	**LOW**
210		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Narwhals	16	2	0.5	1	1.75	1.75		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				5	1.5	7.5	**64.2**	**LOW**

OFFSHORE SENSITIVITY RANKINGS

May 10 to August 6

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
211		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	5	0.75	8	1.75	14		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Bearded Seals	17	2	0.75	2	1.75	3.5		
		Harp Seals	17	2	0.25	1	1.75	1.75		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	0.25	1	1.75	1.75		
		Beluga Whales	16	2	0.25	1	1.75	1.75		
		Narwhals	16	2	0.25	1	1.75	1.75		
		Walrus	15	2	0.5	1	1.75	1.75		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				5	1.5	7.5	99.2	MODERATE
212		Ringed Seals	17	5	1	8	1.75	14		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	0.25	1	1.75	1.75		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				5	1.5	7.5	62.5	LOW

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
301		Narwhals	16	5	0.5	4	1.75	7		
		Alcids	22	2	1	4	1.75	7		
		Fulmars	20	2	1	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	0	0	0	1.75	0		
		Bearded Seals	17	0	0	0	1.75	0		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	0	0	0	1.75	0		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	34.2	LOW
302		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	1	8	1.75	14		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	0.5	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	89.5	MODERATE

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
303		Narwhals	16	5	0.5	4	1.75	7		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	1	8	1.75	14		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	0.5	2	1.75	3.5		
		Bowhead Whales	17	2	0.5	2	1.75	3.5		
		Beluga Whales	16	2	0.5	1	1.75	1.75		
		Walrus	15	2	1	3	1.75	5.25		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	88.5	MODERATE
304		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	0.5	4	1.75	7		
		Bowhead Whales	17	5	0.5	4	1.75	7		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	5	1	9	1.75	15.75		
		Gulls	18.5	5	1	8	1.75	14		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	0.5	2	1.75	3.5		
		Bearded Seals	17	2	0.5	2	1.75	3.5		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	0.5	2	1.75	3.5		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	89.5	MODERATE

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
305		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Harp Seals	17	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	2	1	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				3	1.5	4.5	109.5	HIGH
306		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	2	1	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				3	1.5	4.5	109.5	HIGH

OFFSHORE SENSITIVITY RANKINGS — August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
307		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Harp Seals	17	5	1	8	1.75	14		
		Alcids	22	5	1	10	1.75	17.5		
		Fulmars	20	2	1	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	1	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Highly Important to Res.				9	2	18		
		Marine Oil Residence				3	1.5	4.5	107.5	HIGH
308		Proposed National Park				3	1.5	4.5		
		Important to Residents				8	2	16		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Alcids	22	5	0.75	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.75	2	1.75	3.5		
		Walrus	15	2	1	3	1.75	5.25		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	109	HIGH

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
309		Proposed National Park				3	1.5	4.5		
		Proposed Bird Sanctuary				3	1.5	4.5		
		Narwhals	16	5	0.75	5	1.75	8.75		
		Bowhead Whales	17	5	1	8	1.75	14		
		Alcids	22	5	0.75	8	1.75	14		
		Fulmars	20	5	0.75	7	1.75	12.25		
		Gulls	18.5	5	0.75	6	1.75	10.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	0.75	2	1.75	3.5		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	101	HIGH
310		Proposed National Park				3	1.5	4.5		
		Narwhals	16	5	1	7	1.75	12.25		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.75	3	1.75	5.25		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.75	3	1.75	5.25		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	5	1	8	1.75	14		
		Beluga Whales	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				3	1.5	4.5	93.7	MODERATE

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
311		Bowhead Whales		5		0	1.75	0		
		Narwhals	16	5	1	7	1.75	12.25		
		Alcids	22	2	0.5	2	1.75	3.5		
		Fulmars	20	2	0.5	2	1.75	3.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	57	LOW
312		Bowhead Whales		5		0	1.75	0		
		Narwhals	16	5	1	7	1.75	12.25		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Alcids	22	2	0.5	2	1.75	3.5		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	2	0.5	2	1.75	3.5		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				3	1.5	4.5	82.2	MODERATE

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
313		Bearded Seals	17	2	1	3	1.75	5.25		
		Alcids	22	5	0.5	5	1.75	8.75		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Gulls	18.5	5	0.5	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Narwhals	16	2	1	3	1.75	5.25		
		Walrus	15	2	1	3	1.75	5.25		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				3	1.5	4.5	94.5	MODERATE
314		Alcids	22	5	0.5	5	1.75	8.75		
		Fulmars	20	5	0.5	5	1.75	8.75		
		Gulls	18.5	5	0.5	4	1.75	7		
		Sea Ducks	19	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Narwhals	16	2	1	3	1.75	5.25		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				5	1.5	7.5	72.2	MODERATE

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
315		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	2	1	3	1.75	5.25		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				3	1.5	4.5	39.5	LOW
316		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	2	1	3	1.75	5.25		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	2	1	3	1.75	5.25		
		Beluga Whales	16	2	1	3	1.75	5.25		
		Narwhals	16	2	1	3	1.75	5.25		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Greatest Importance to Res.				10	2	20		
		Marine Oil Residence				6	1.5	9	69.2	LOW

OFFSHORE SENSITIVITY RANKINGS

August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
317		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				6	1.5	9	28.3	LOW
318		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				6	1.5	9	28.3	LOW

OFFSHORE SENSITIVITY RANKINGS — August 7 to October 7

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
319		Alcids	22	0	0	0	1.75	0		
		Fulmars	20	0	0	0	1.75	0		
		Sea Ducks	19	0	0	0	1.75	0		
		Gulls	18.5	0	0	0	1.75	0		
		Geese	17	0	0	0	1.75	0		
		Ringed Seals	17	2	1	3	1.75	5.25		
		Bearded Seals	17	2	1	3	1.75	5.25		
		Harp Seals	17	0	0	0	1.75	0		
		Polar Bears	18	2	1	3	1.75	5.25		
		Bowhead Whales	17	0	0	0	1.75	0		
		Beluga Whales	16	0	0	0	1.75	0		
		Narwhals	16	0	0	0	1.75	0		
		Walrus	15	0	0	0	1.75	0		
		Arctic Char	14.5	0	0	0	1.75	0		
		Arctic Cod	13.5	2	1	2	1.75	3.5		
		Marine Oil Residence				6	1.5	9	28.3	LOW

OFFSHORE SENSITIVITY RANKINGS

October 8 to December 31

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
401		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				5.0	1.50	7.50	12.0	LOW
402		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				3.0	1.50	4.50		
		Greatest Importance to Residents				10.0	2.00	20.00	29.0	MODERATE
403		Proposed National Park				3.0	1.50	4.50		
		Proposed Bird Sanctuary				3.0	1.50	4.50		
		Marine Oil Residence				5.0	1.50	7.50	16.5	MODERATE
404		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				3.0	1.50	4.50		
		Greatest Importance to Residents				10.0	2.00	20.00	29.0	MODERATE
405		Marine Oil Residence				7.0	1.50	10.50		
		Greatest Importance to Residents				10.0	2.00	20.00	30.50	HIGH
406		Marine Oil Residence				7.0	1.50	10.50		
		Greatest Importance to Residents				10.0	2.00	20.00	30.50	HIGH
407		Marine Oil Residence				3.0	1.50	4.50	4.50	LOW

OFFSHORE SENSITIVITY RANKINGS

January 1 to May 9

Area	Operation Map	Element	Relative Sensitivity	Relative Abundance	Seasonal Modifier	Assigned Value	Weighting Factor	Priority Index	Sensitivity Ranking	Final Ranking
501		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				3.0	1.50	4.50	9.0	LOW
502		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				5.0	1.50	7.50		
		Highly Important to Residents				9.0	2.00	18.00	30.0	MODERATE
503		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				3.0	1.50	4.50		
		Greatest Importance to Residents				10.0	2.00	20.00	29.0	MODERATE
504		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				7.0	1.50	10.50		
		Important to Residents				8.0	2.00	16.00	31.0	EXTREME
505		Proposed National Park				3.0	1.50	4.50		
		Proposed Bird Sanctuary				3.0	1.50	4.50		
		Marine Oil Residence				5.0	1.50	7.50	16.5	MODERATE
506		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				7.0	1.50	10.50		
		Important to Residents				8.0	2.00	16.00	31.0	EXTREME
507		Proposed National Park				3.0	1.50	4.50		
		Marine Oil Residence				3.0	1.50	4.50		
		Greatest Importance to Residents				10.0	2.00	20.00	29.0	MODERATE
508		Marine Oil Residence				5.0	1.50	7.50		
		Important to Residents				8.0	2.00	16.00	23.50	MODERATE
509		Marine Oil Residence				7.0	1.50	10.50		
		Greatest Importance to Residents				10.0	2.00	20.00	30.50	HIGH
510		Marine Oil Residence				3.0	1.50	4.50		
		Greatest Importance to Residents				10.0	2.00	20.00	24.50	MODERATE
511		Marine Oil Residence				3.0	1.50	4.50	4.50	LOW

1.0 INTRODUCTION

This Appendix describes the climate of the Lancaster Sound Region. The climate is presented graphically through line plots and histograms in Figures B.1-B.33. The parameters presented were selected on the basis of their relevance to oil spill countermeasures response as described below.

Air temperature (Figures B.4, B.5 and B.20) and wind chill (Figures B.6 and B.22) affect the performance of people and equipment during cleanup operations.

Wind speeds ≥ 15 knots (Figures B.8, B.9, B.24 and B.25) will begin to limit the use of containment booming, aerial igniters, aerial dispersant application, and in-situ burning of oil in melt pools on ice during the open water season.

Wind speed and direction (Figures B.10, B.11, and B.29-31) affect surface water and ice movements and hence oil slick movement as well as determining probable positions for deflection booming.

The persistence of wind speeds < 20 knots (Figure B.7 and B.26) indicates the probability of low winds favourable to cleanup operations lasting for a specified time.

Weather preventing visual flight rules (VFR) flying (Figures B.12, B.13, and B.21) and the likely duration of restricted flying weather conditions (Figures B.14 and B.22) indicate the time available for aircraft operations such as travel, surveillance, and aerial photography.

The frequency of good shipping weather (Figures B.15 and B.27), icing of vessels (Figure B.3), and daylight hours (Figure B.2) affect marine travel and vessel operations for surveillance and cleanup activities.

Wave heights from 1.0 m to 1.5 m (Figures B.18, B.19, B.34, and B.35) increasingly limit the effectiveness of containment booming.

The physical properties of the oil, such as viscosity, will depend on the oil temperature which is usually taken as the sea surface temperature (Figures B.16, B.17, B.32, and B.33).

2.0 CLIMATIC AND MARINE DATA

2.1 Data Sources

Figures B.3-B.33 are based on data from the Atmospheric Environment Service's data archives (6). The data came from three different sources within the overall database:

Shore Stations:	Resolute Pond Inlet Rea Point
Marine Areas:	Marine Area 11 - Entrance to Lancaster Sound Marine Area 9 - Lancaster Sound Marine Area 8 - Barrow Strait Marine Area 7 - Eastern Viscount Melville Sound
Grid Points:	GP4 - in Marine Area 11 GP6 - in Marine Area 9 GP7 - in Peel Sound GP8 - in Byam Martin Channel

The pages containing Figures B.4-B.33 have been labeled "Shore Data", "Marine Data", or "Shore and Marine Data" to indicate the general source of the data. The location of the data is further indicated in the Figure titles. The locations of the shore stations, marine areas, and grid points are shown in Summary Map B.1. The period of record of each shore station, marine area, and grid point is given in Table B.1.

Data for marine areas is collected from all available ship reports within the defined area. Any time a ship is within a marine area its weather observations are added to the data set for that marine area. This limitation means that the available marine data for the region is restricted to the short shipping season.

Table B.1 Period of Record for Data Sources

Source	Period of Record
Resolute (shore station)	1953-1988
Pond Inlet (shore station)	1975-1988
Rea Point (shore station)	1969-1977
Marine Area 11	1903-1988
Marine Area 9	1903-1988
Marine Area 8	1903-1988
Marine Area 7	1948-1988
GP4	1946-1978
GP6	1946-1978
GP7	1946-1978
GP8	1946-1978

Marine observations in the Lancaster Sound Region are only statistically significant from break-up to freeze-up. In Lancaster Sound, the shipping season starts in June and can extend until November; further west in Viscount Melville Sound, the season usually runs from August to October. The number of historical observations for Lancaster Sound ranges from a low of 30 in May to a high of 3,000 in August. In Viscount Melville Sound, the observations number 300 at the start of the open water season in August reducing to only 150 by October.

A minimum of 25 marine observations for each month was required before adding the data to a graph. The resulting graphs reflect the typical shipping season. (This is not a deficiency for oil spill response purposes since any marine based response would take place during the open water season.)

The grid point data consists of geostrophic wind speeds and directions (numerically derived from mean sea level pressure maps). The derived geostrophic winds have been compared to measured surface winds and they agree for wind speeds less than 40 knots over open areas (27).

2.2 Data Organization

For presentation of the climate data, the shore stations, marine areas, and grid points have been grouped into east and west regions corresponding to the regional maps (see Regional Map 1). The assignment of data sources is shown in Table B.2.

Table B.2 Assignment of Data to Regions

East Region (Lancaster Sound)	**West Region** (Barrow Strait & Viscount Melville Sound)
Pond Inlet	Resolute
Entrance to Lancaster Sound	Rea Point
Lancaster Sound	Barrow Strait
GP4	Eastern Viscount Melville Sound
GP6	GP7
	GP8

The climatic parameters were chosen from the most appropriate source. Air temperature, wind chill, and flying weather graphs were derived from the shore station data. Good shipping weather, sea surface temperature, icing, and wave height graphs came from the marine area data. Marine areas rather than shore stations were used for the wind speed and direction. Winds at shore stations are affected by coastal features and may not represent the winds offshore, which is the area of interest. The grid points were used for the wind speed duration data. Graphs of winter winds are not included (reflecting the limited opportunity for winter spill response).

2.3 Data Limitations

As discussed above, the marine area data set only has enough observations to be statistically significant during the open water season. It should be kept in mind that statistics for the middle of the season (August) may be more reliable than those for the start and end of the season. Another limitation of the marine data is that it tends to be biased towards good weather. Vessels tend to avoid or move out of areas of bad weather. This bias has been compensated for by using the grid point data for wind speed durations (the grid point data is prepared from maps of geostrophic winds, independent of good or poor weather). The wind duration graphs predict the probability of wind speeds less than 20 knots continuing for any number of days.

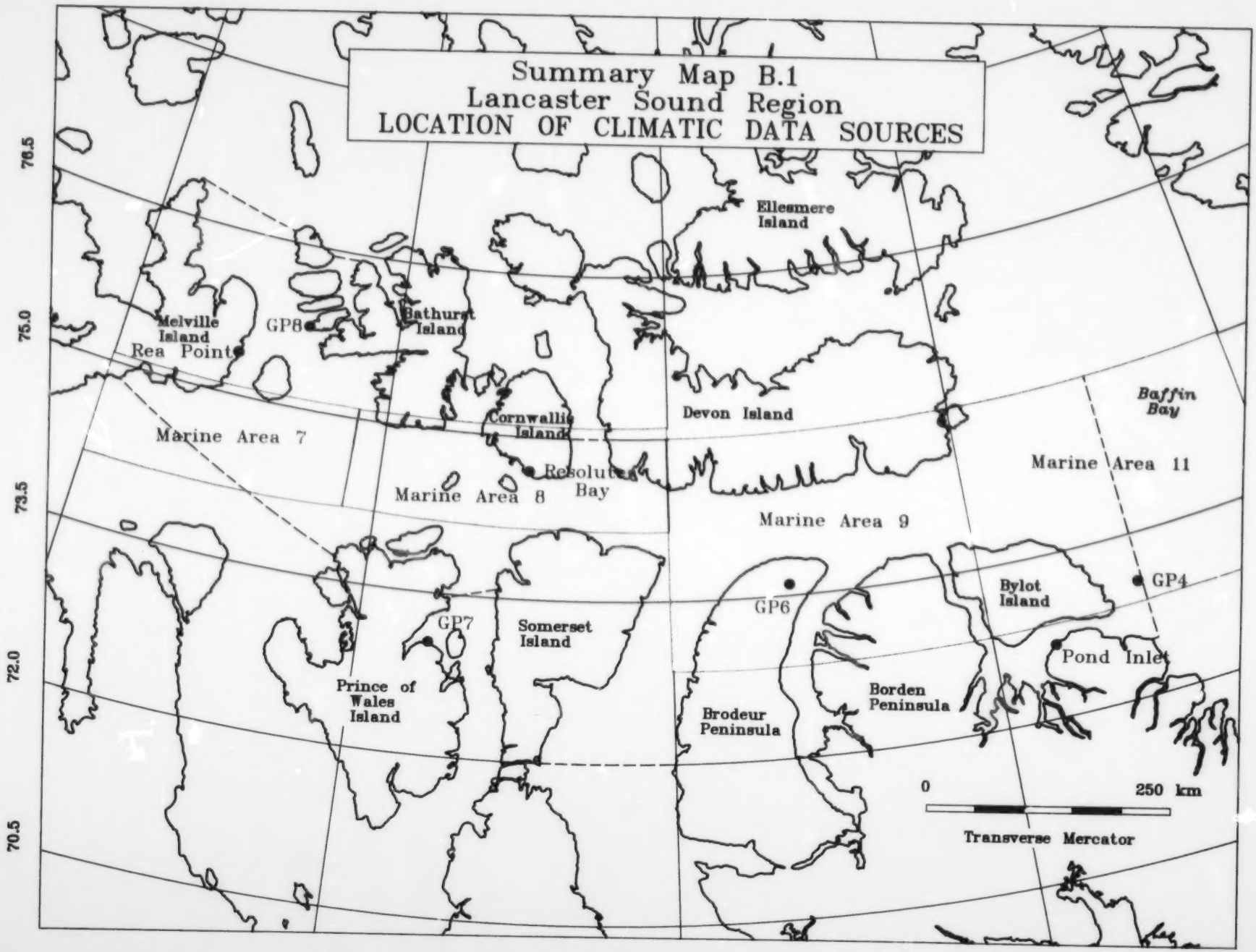
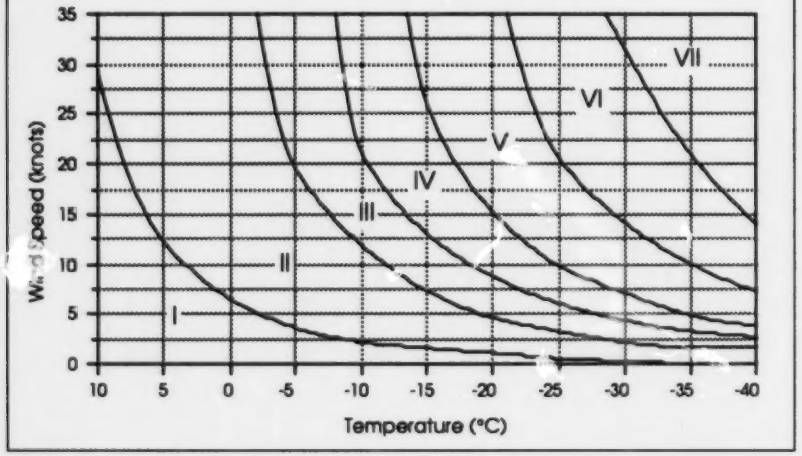

Summary Map B.1
Lancaster Sound Region
LOCATION OF CLIMATIC DATA SOURCES
76.5
75.0
73.5
72.0
70.5
100.0
90.0
80.0
Ellesmere Island
Melville Island
Rea Point
GP8
Bathurst Island
Cornwallis Island
Devon Island
Baffin Bay
Marine Area 7
Resolute Bay
Marine Area 8
Marine Area 9
Marine Area 11
GP6
GP4
Bylot Island
GP7
Somerset Island
Pond Inlet
Prince of Wales Island
Borden Peninsula
Brodeur Peninsula
0
250 km
Transverse Mercator

Figure B.1 Wind Chill Classes



Wind Chill Classes Description

I	Comfortable with normal precaution.
II	Work and travel become uncomfortable unless properly clothed.
III	Work and travel become more hazardous unless properly clothed. Heavy outer clothing necessary.
IV	Unprotected skin will freeze with direct exposure over prolonged period. Heavy outer clothing becomes mandatory.
V	Unprotected skin can freeze in one minute with direct exposure. Multiple layers of clothing mandatory. Adequate face protection becomes important. Work and travel alone not advisable.
VI	Face protection becomes mandatory. Work and travel alone prohibited. Supervisors must control exposure times by careful work scheduling.
VII	Personnel become easily fatigued. Buddy system and observation mandatory.

References: 26

Figure B.2 Duration of Daylight at 74°N

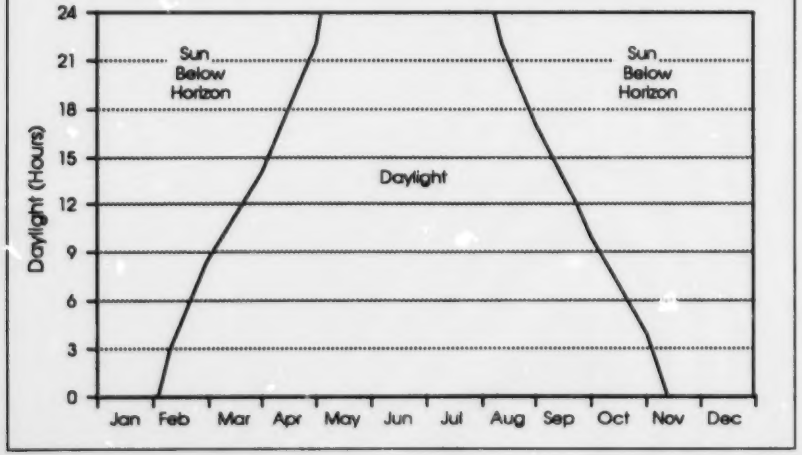


Figure B.3 Potential Icing Rate Due to Freezing Spray
Lancaster Sound Region

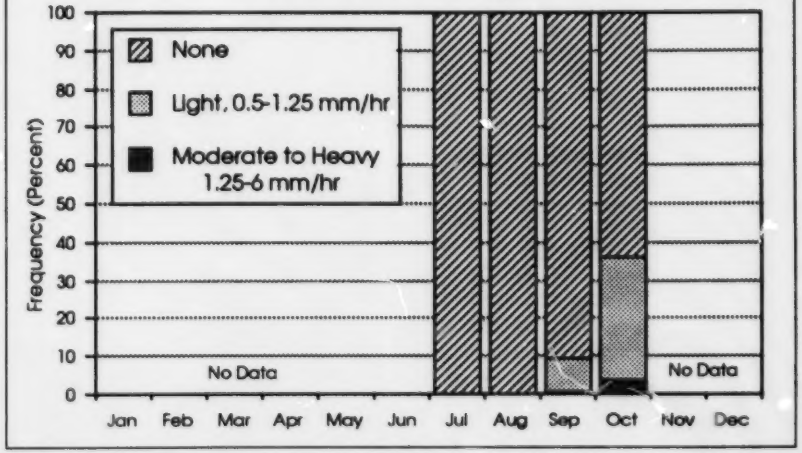


Figure B.4 Air Temperature
Resolute

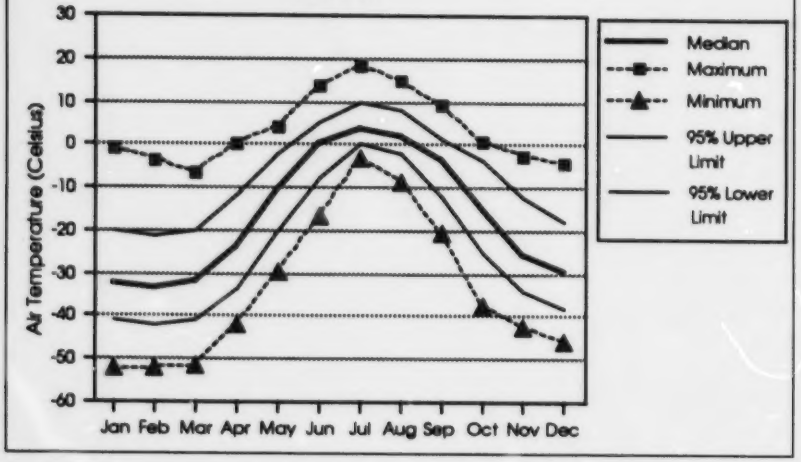


Figure B.5 Air Temperature
Rea Point

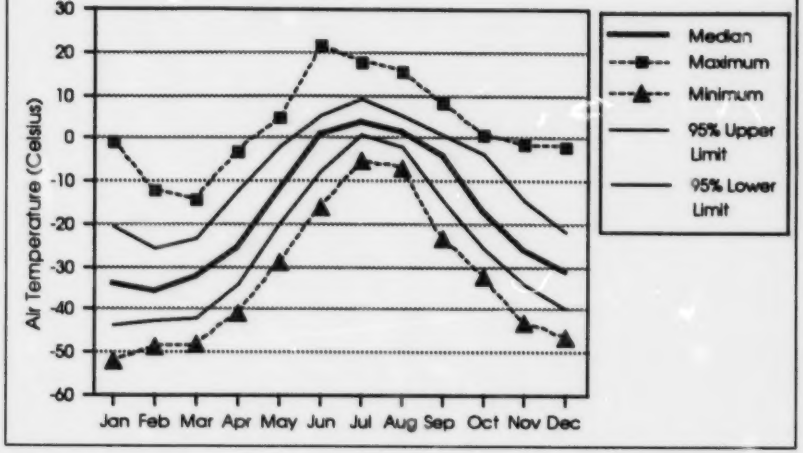


Figure B.6 Frequency of Wind Chill Classes
Resolute and Rea Point

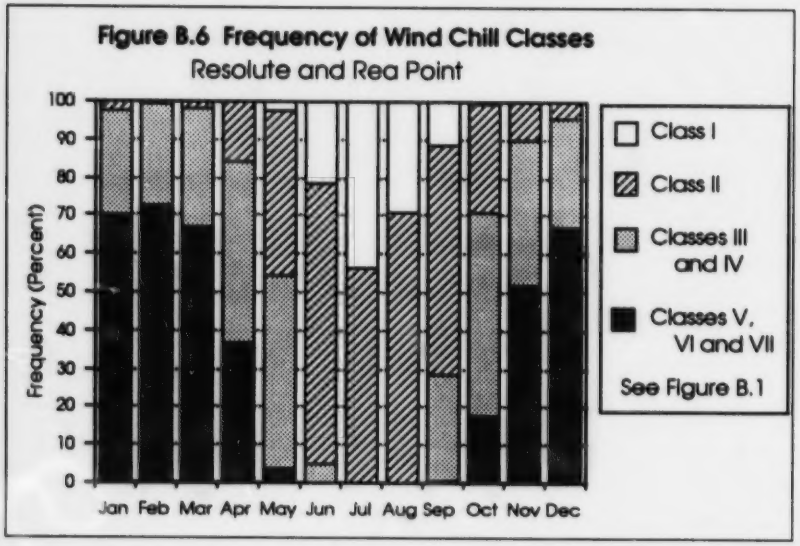


Figure B.7 Persistence of Wind Speeds
September - Winds < 20 kts

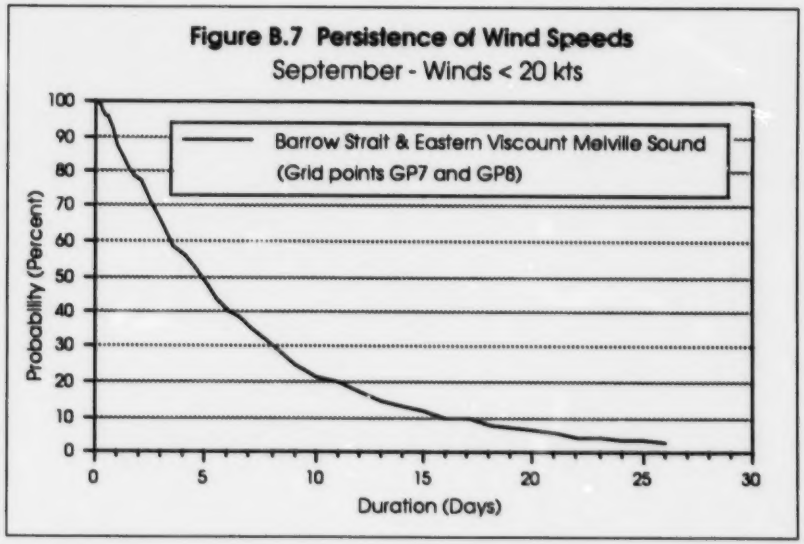


Figure B.8 Wind Speed Frequencies
Barrow Strait

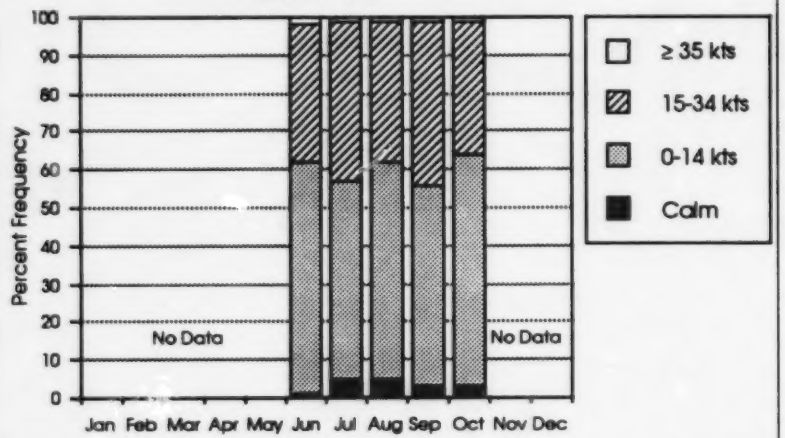


Figure B.9 Wind Speed Frequencies
Eastern Viscount Melville Sound

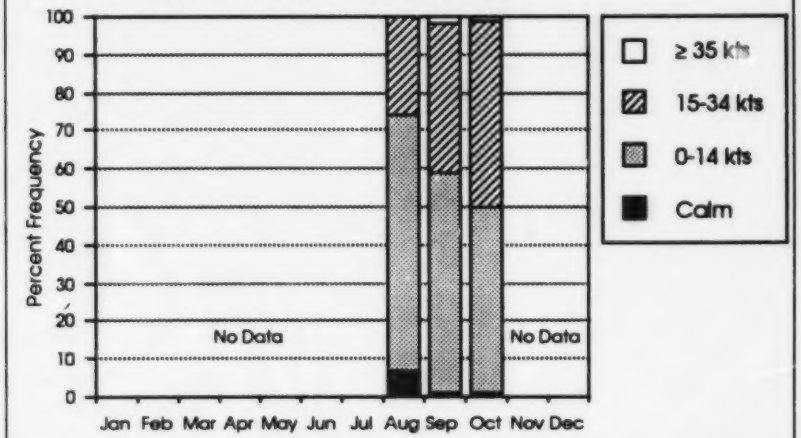


Figure B.10 Wind Direction Frequencies
September - Barrow Strait

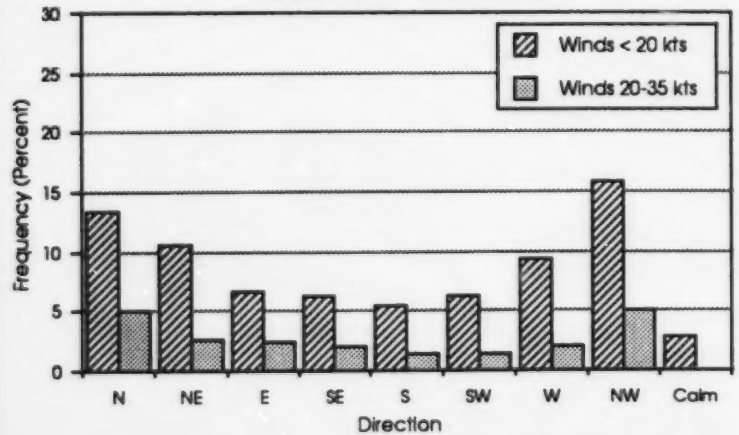


Figure B.11 Wind Direction Frequencies
September - Eastern Viscount Melville Sound

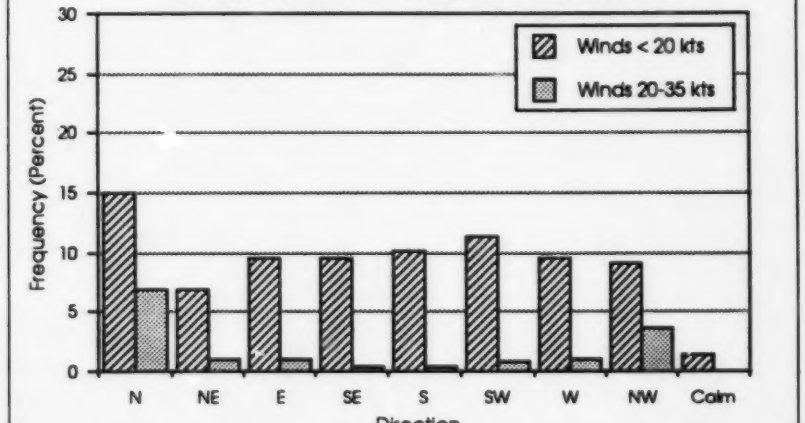


Figure B.12 Frequency of Restricted VFR Flying Weather
Resolute

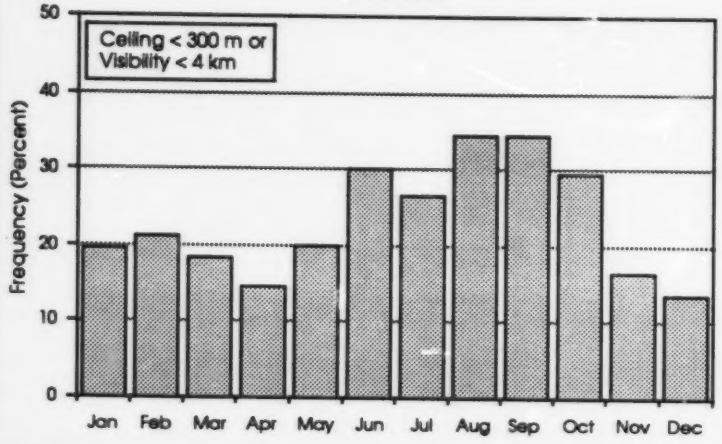


Figure B.13 Frequency of Restricted VFR Flying Weather
Rea Point

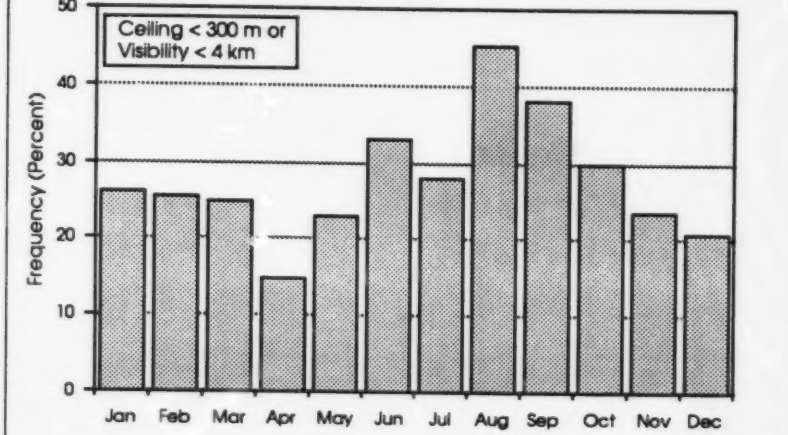


Figure B.14 Persistence of Restricted VFR Flying Weather
September - Rea Point and Resolute

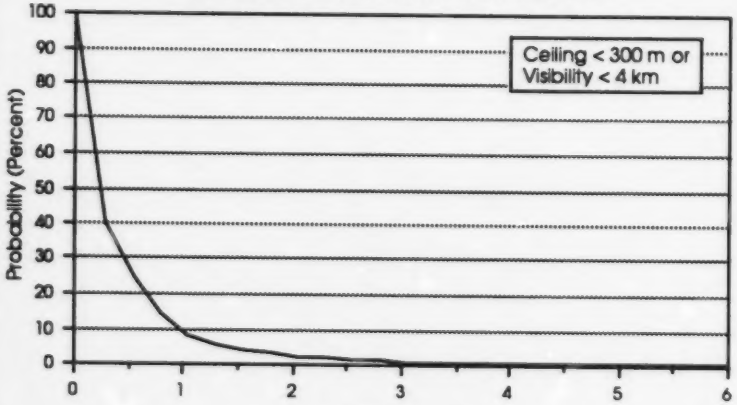


Figure B.15 Good Shipping Weather
Barrow Strait and Eastern Viscount Melville Sound

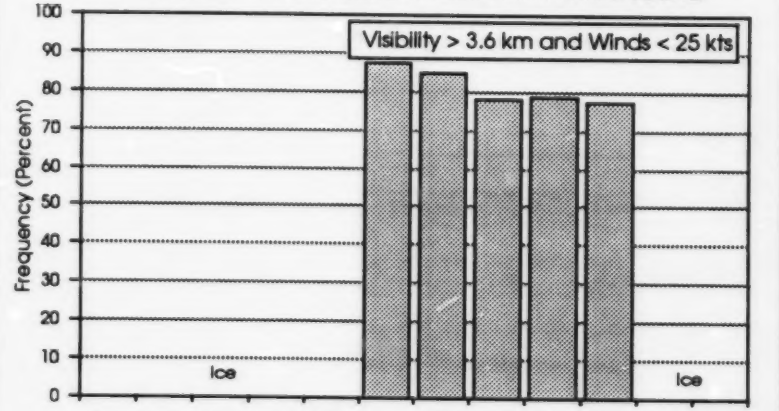


Figure B.16 Sea Surface Temperature
Barrow Strait

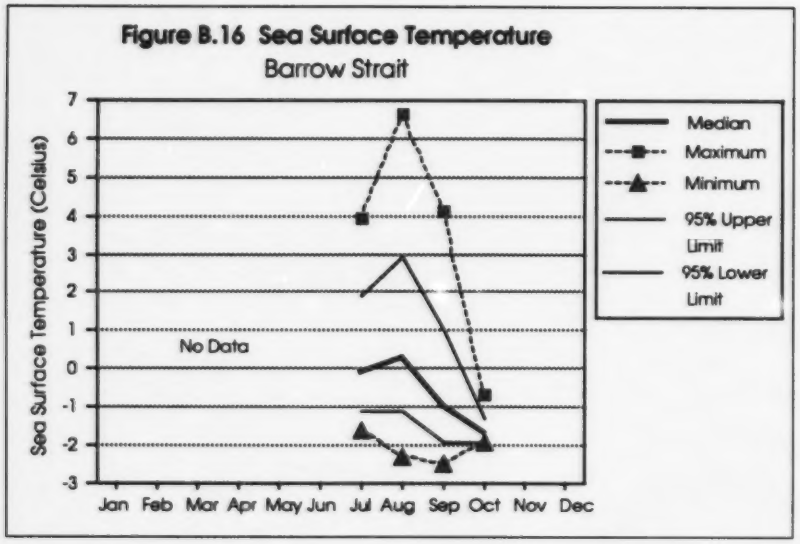


Figure B.17 Sea Surface Temperature
Eastern Viscount Melville Sound

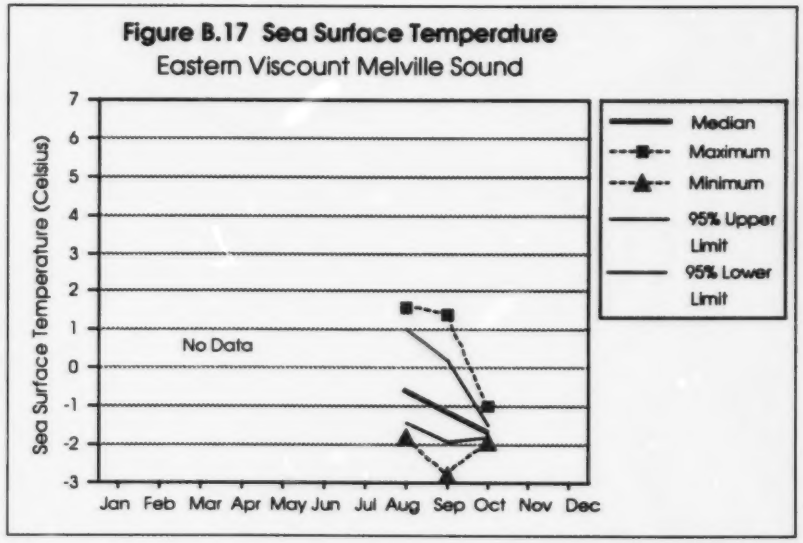


Figure B.18 Wave Height Frequencies
Barrow Strait

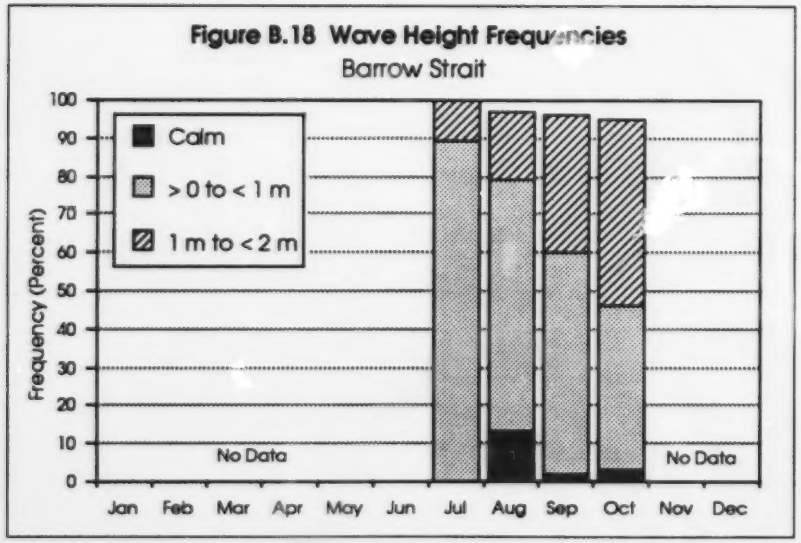


Figure B.19 Wave Height Frequencies
Eastern Viscount Melville Sound

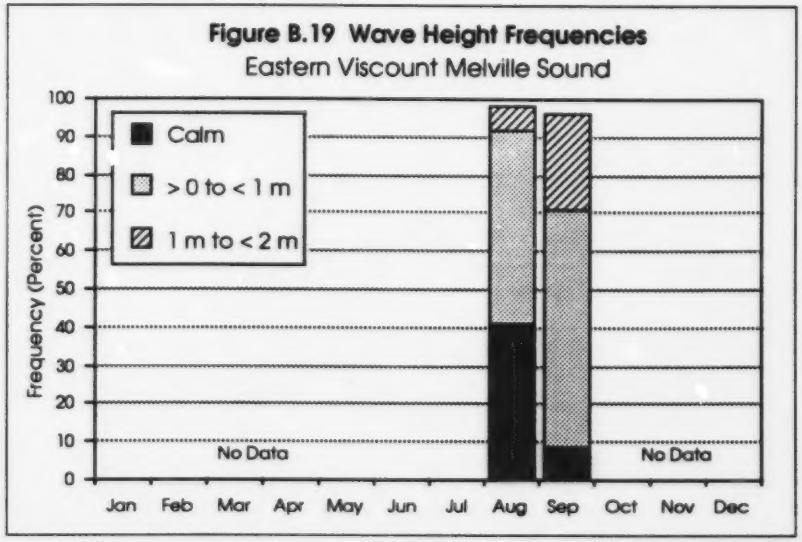


Figure B.20 Air Temperature
Pond Inlet

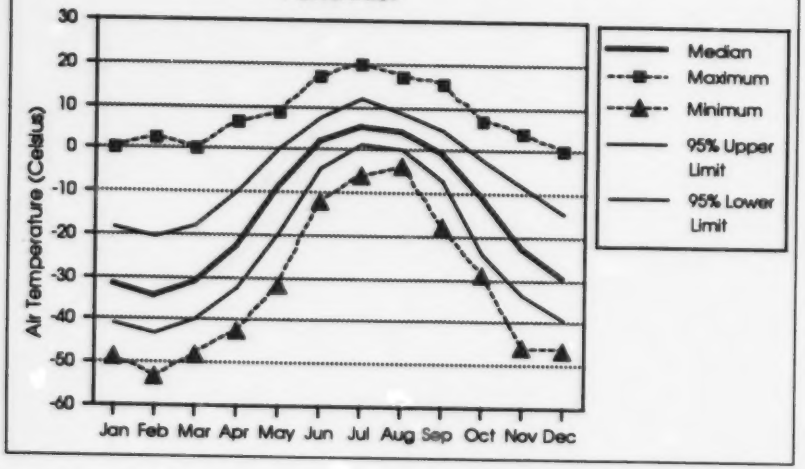


Figure B.21 Frequency of Restricted VFR Flying Weather
Pond Inlet

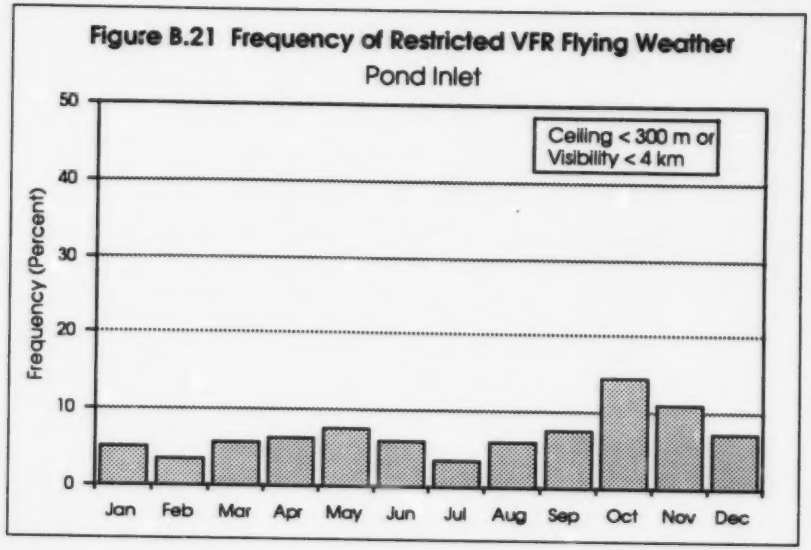


Figure B.22 Frequency of Wind Chill Classes
Pond Inlet

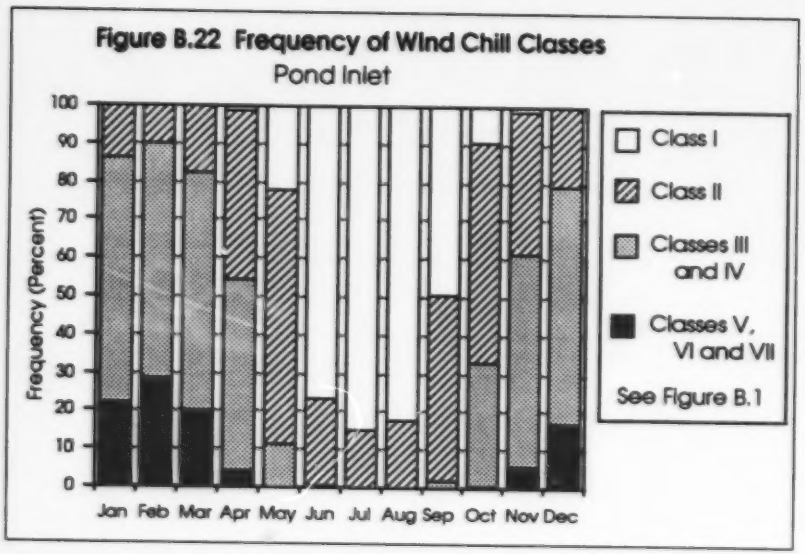


Figure B.23 Persistence of Restricted VFR Flying Weather
September - Pond Inlet

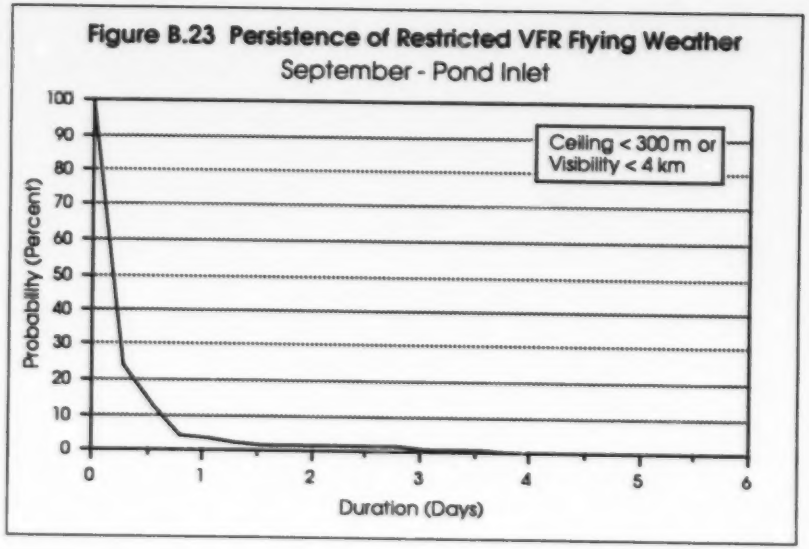


Figure B.24 Wind Speed Frequencies
Entrance to Lancaster Sound

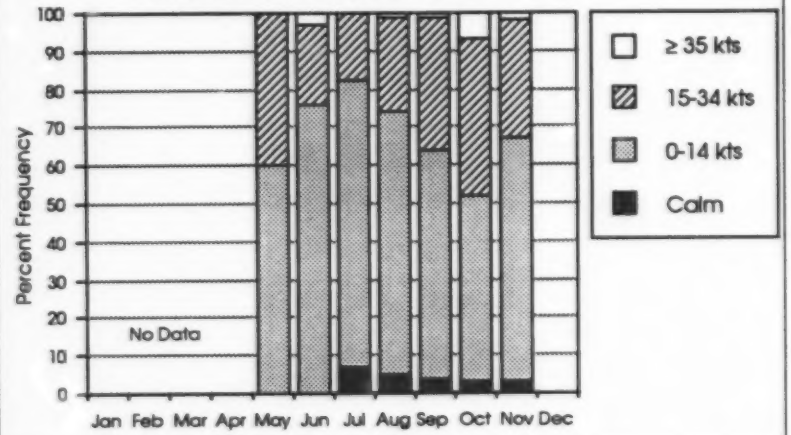


Figure B.25 Wind Speed Frequencies
Lancaster Sound

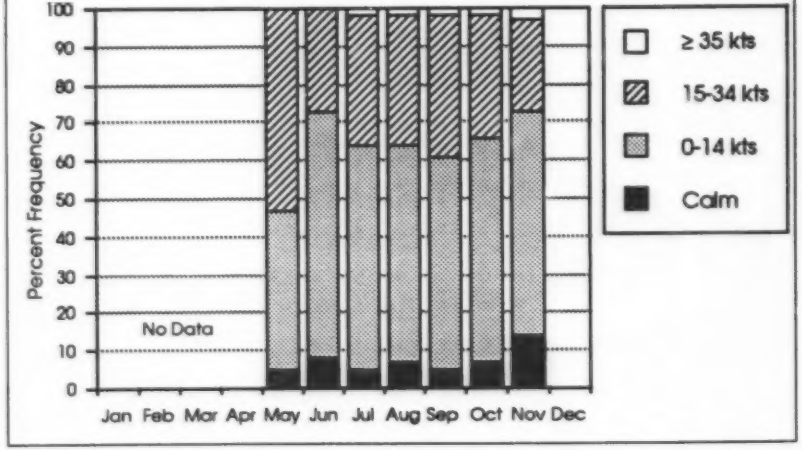


Figure B.26 Persistence of Wind Speeds
September - Winds < 20 kts

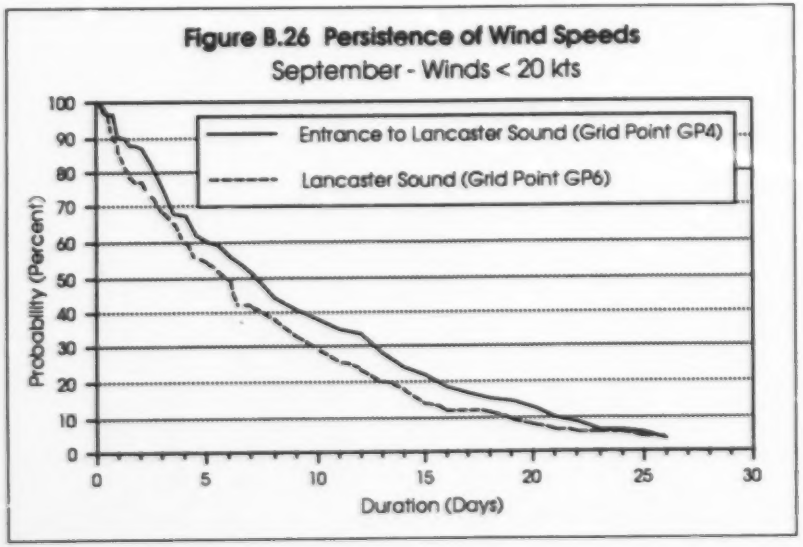


Figure B.27 Good Shipping Weather
Lancaster Sound and Entrance

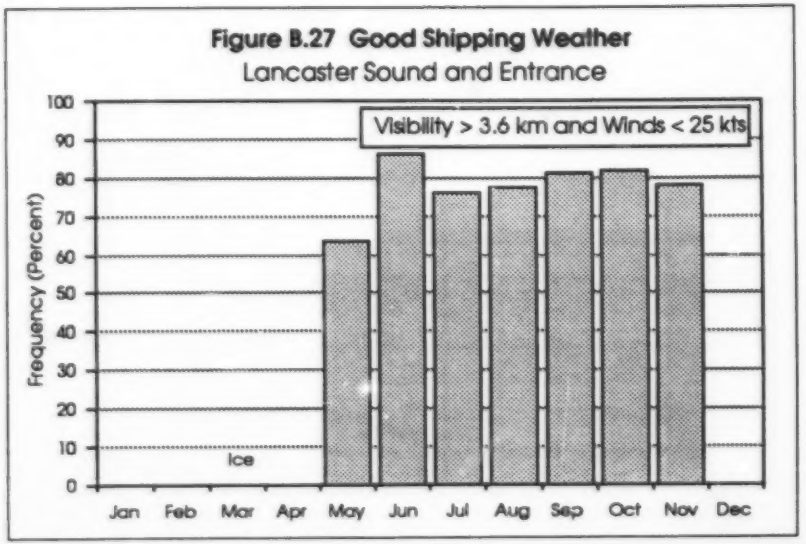


Figure B.28 Wind Direction Frequencies
July - Entrance to Lancaster Sound

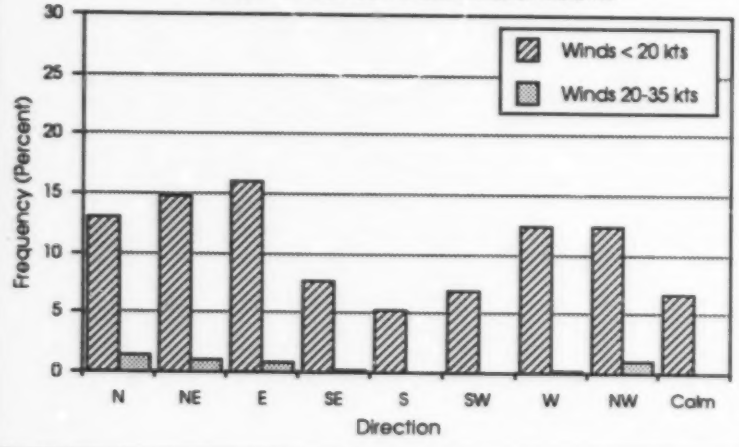


Figure B.29 Wind Direction Frequencies
July - Lancaster Sound

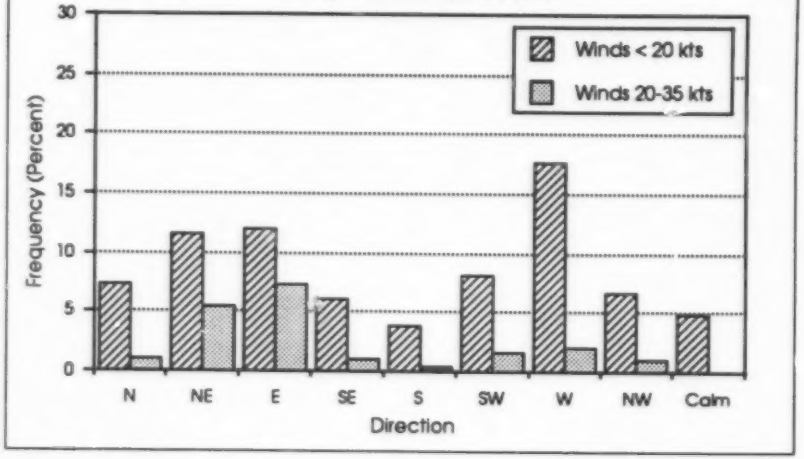


Figure B.30 Wind Direction Frequencies
September - Entrance to Lancaster Sound

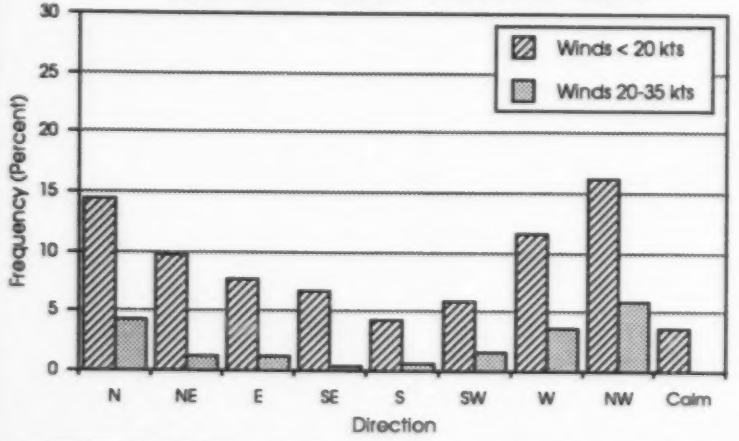


Figure B.31 Wind Direction Frequency
September - Lancaster Sound

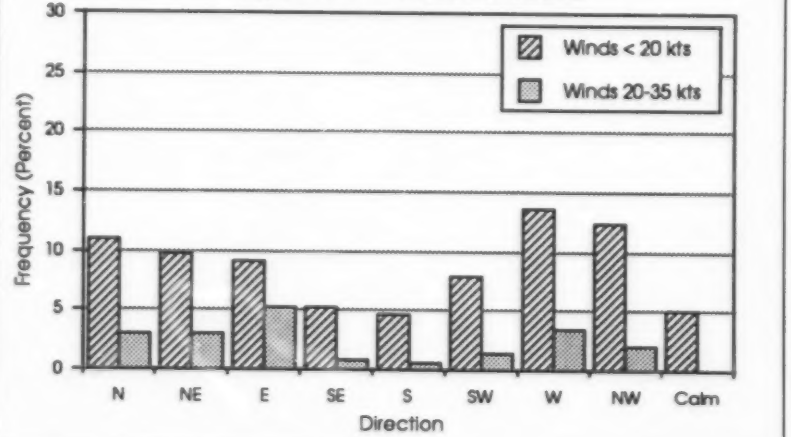
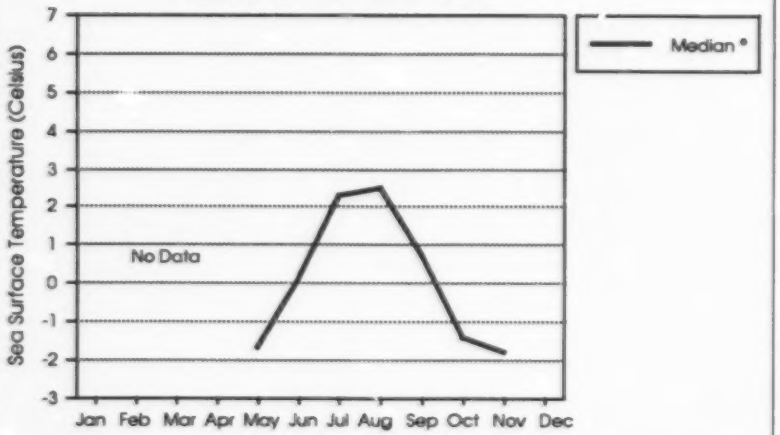
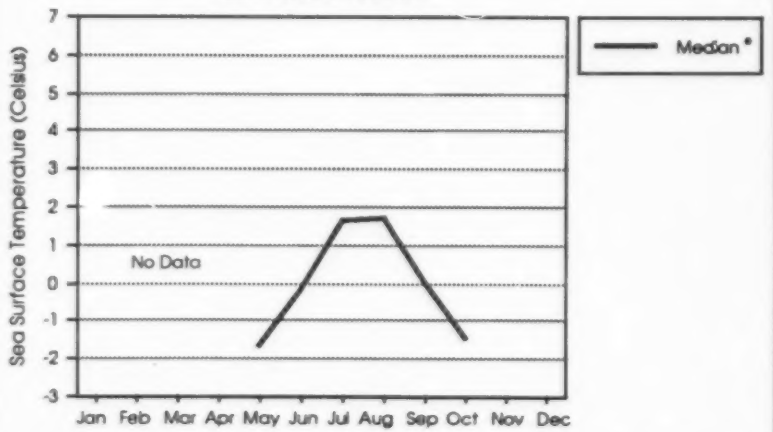


Figure B.32 Sea Surface Temperature
Entrance to Lancaster Sound



* The maximum, 95% upper limit, 95% lower limit, and minimum values are not shown as the data set contains incorrect values

Figure B.33 Sea Surface Temperature
Lancaster Sound



* The maximum, 95% upper limit, 95% lower limit, and minimum values are not shown as the data set contains incorrect values

Figure B.34 Wave Height Frequencies
Entrance to Lancaster Sound

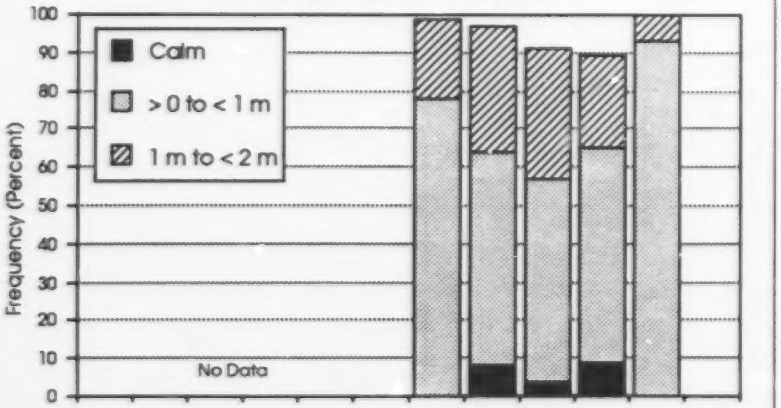
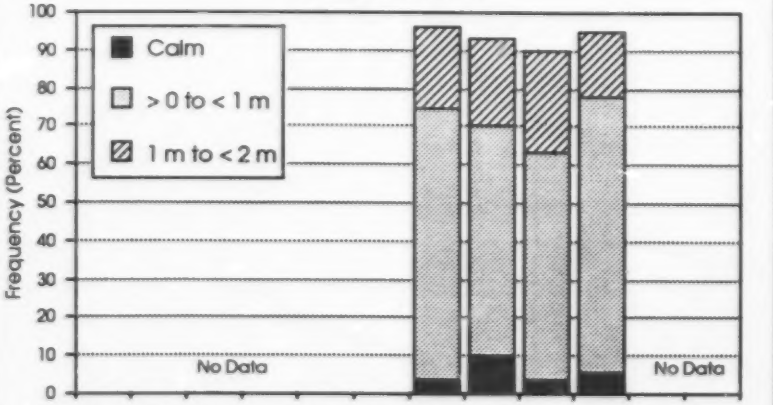


Figure B.35 Wave Height Frequencies
Lancaster Sound



INDEX OF PLACE NAMES

Place Name	Operational Map Number	Latitude deg	min	sec	Longitude deg	min	sec
Adams Island	27	73	43	44.8	81	27	35.7
Adams River	25	72	51	27.0	84	18	39.2
Adams Sound	22, 25	73	0	6.9	85	31	33.8
Admiralty Inlet	21-26	73	32	32.1	85	0	50.2
Admiralty Inlet		72	59	4.8	86	7	17.9
Admiralty Inlet		72	30	42.4	86	7	18.8
Albert Harbour	34	72	45	45.5	77	28	5.4
Alfred Point	28	72	35	15.1	80	32	26.1
Allen Bay	6	74	46	38.6	95	20	23.7
Allison Inlet	9	75	8	0.0	99	25	0.0
Alpha River	29	72	23	22.3	81	14	27.5
Apujauvik Headland	16	72	47	15.9	93	34	23.7
ARCTIC BAY	22, 25	73	2	48.2	85	22	58.0
Arctic Bay	22, 25	73	0	16.1	85	17	4.1
Assistance Bay	6	74	38	4.0	94	21	26.2
Aston Bay	13	73	49	24.2	95	18	22.9
Austin Channel	10	75	5	57.0	103	14	1.8
Back Bay	12	73	32	16.3	97	22	14.6
Baffin Bay	32-34	73	47	13.1	77	18	31.5
Baffin Bay		75	4	19.0	77	38	49.1
Baffin Bay		72	51	32.5	75	25	2.9
Baffin Island	29-31,	72	30	0.9	78	9	1.4
Baffin Island	34	71	23	19.2	80	24	55.4
Baffin Island		72	5	44.0	80	6	20.8
Baffin Island		71	46	3.0	78	50	38.0
Baffin Island		72	38	7.6	77	21	58.4
Baillarge Bay	21, 26	73	20	21.6	84	39	22.3
Baker Island	9	75	2	33.0	97	40	56.9
Baring Channel	11, 12	73	50	44.2	98	14	20.1
Baring Island		75	55	5.7	96	42	53.8
Barlow Inlet	5	74	45	44.2	93	40	11.0
Barrow Strait	5-6, 8,	74	22	21.9	97	50	54.9
Barrow Strait	11-13	74	5	40.7	99	51	21.3
Barrow Strait		74	8	17.8	95	16	7.0
Barrow Strait		74	33	36.8	92	45	11.2
Bartlett Inlet	24	72	14	2.0	84	41	53.0
Bass Point	7, 9	75	23	22.0	97	47	54.4
Bathurst Bay	32, 33	73	21	16.5	76	58	49.4
Bathurst Island	7, 9, 10	75	41	27.0	100	53	10.6
Batty Bay	15	73	14	15.2	91	20	58.5
Beatrice Point	1	74	47	59.8	79	54	52.9
Becher Beach	6	74	47	37.2	95	46	52.6
Beechey Island	5	74	42	51.0	92	9	19.1
Bellot Strait	17	72	1	0.0	94	30	0.0
Bent Horn	10	76	17	3.1	104	30	0.2
Beta River	29	72	18	7.5	81	27	27.9
Bethune Inlet	1	74	57	53.3	80	35	29.0
Beverley Inlet	10	75	5	32.6	107	39	36.2
Blaney Bay	3	74	27	3.3	87	25	24.6
Bluff Head	27	73	41	10.6	81	25	5.8
Borden Peninsula	24-29	27	52	16.0	82	33	57.8
Borden Peninsula		72	19	18.6	84	21	17.9
Borden Peninsula		72	32	44.4	85	6	57.8
Borden Peninsula		72	51	15.6	85	33	30.8
Borden Peninsula		73	39	4.5	82	18	19.9
Borden Peninsula		72	55	24.5	81	16	27.0
Bridport Inlet	10	73	32	30.3	83	25	30.6
Brodeur Peninsula	18-23	74	59	59.2	108	54	16.8
Brodeur Peninsula		72	54	25.3	87	59	23.1
Brodeur Peninsula		72	26	46.0	87	34	33.4
Brodeur Peninsula		73	6	5.6	87	19	14.3
Brodeur Peninsula		73	40	17.7	86	29	7.0
Brodeur Peninsula		73	37	59.3	87	32	56.9
Brodeur Peninsula		73	1	47.8	88	51	42.7
Brodeur River	18	72	24	59.8	89	11	59.9
Brooman Point	7, 9	72	25	32.9	89	39	42.3
Browne Island	6	75	23	0.0	97	20	0.0
Burnett Inlet	3	74	50	27.4	96	40	34.8
Button Point	32, 34	74	32	39.3	86	1	50.0
Byam Channel	10	72	50	22.2	76	5	15.0
Byam Martin Channel	10	75	6	53.0	105	51	29.7
		76	0	28.2	105	48	40.0

INDEX OF PLACE NAMES

Place Name	Operational Map Number	Latitude deg	min	sec	Longitude deg	min	sec
Byam Martin Island	10	75	11	11.8	104	43	25.9
Bylot Island	27, 28,	73	26	9.3	80	41	53.4
Bylot Island	31-34	72	58	15.0	76	55	13.5
Bylot Island		72	54	13.7	79	38	8.2
Bylot Island		73	13	51.6	77	41	12.2
Bylot Island		73	15	36.6	78	50	50.3
Bylot Island		72	55	6.9	77	5	38.3
Cameron Island	10	76	23	41.4	104	5	2.6
Canada Point	27	73	17	34.7	80	45	4.1
Cape Admiral M'Clintock	14	74	1	29.0	91	9	44.1
Cape Airy	6	74	59	3.3	96	47	23.5
Cape Anne	13	74	5	19.5	95	5	20.0
Cape Berkeley	11	73	55	55.3	100	30	22.4
Cape Bounty	10	74	51	31.9	109	28	11.7
Cape Bullen	2	74	27	45.2	84	54	50.5
Cape Burney	32	73	6	59.4	76	16	45.8
Cape Byam Martin	33	73	29	0.1	77	6	33.1
Cape Capel	9	75	0	28.7	97	57	19.6
Cape Charles Yorke	26	73	46	0.8	83	3	54.0
Cape Clarence	14	73	53	39.9	90	8	34.8
Cape Cockburn	10	74	57	11.5	101	42	12.4
Cape Crauford	21, 26	73	44	58.9	84	48	48.4
Cape Cunningham	22, 25	72	58	0.7	85	47	42.0
Cape Dungeness	5	74	37	54.4	93	46	41.3
Cape Esther	16, 17	72	24	40.9	93	45	39.1
Cape Evans	7, 9	75	5	4.4	97	37	26.0
Cape Fanshawe	33	73	33	21.2	77	16	4.8
Cape Garry	16, 17	72	26	53.7	93	23	47.9
Cape Graham Moore	32, 34	72	53	0.9	76	33	45.4
Cape Granite	12	73	44	16.1	96	2	43.8
Cape Grey	11	73	59	30.0	99	11	33.3
Cape Hardy	12	73	55	31.3	97	34	57.6
Cape Hatt	29	72	30	42.6	79	46	29.8
Cape Hay	27	73	44	44.6	80	8	53.9
Cape Home	2	74	32	5.3	83	33	9.0
Cape Hotham	5	74	38	37.2	93	31	20.8
Cape Hurd	4	74	31	6.4	90	1	3.2
Cape Joy	26	73	40	25.1	83	22	29.7
Cape Liddon	4	74	37	51.1	91	4	11.9
Cape Liverpool	33	73	41	1.6	78	8	7.8
Cape Macculloch	34	72	29	36.9	75	6	36.7
Cape Martyr	6	74	41	0.0	96	5	0.0
Cape Rennell	13	74	11	27.2	93	27	20.4
Cape Ricketts	5	74	36	43.1	91	27	16.6
Cape Riley	5	74	40	11.9	91	50	14.8
Cape Rosse	6	74	53	18.1	96	29	52.1
Cape Seppings	14	73	48	13.6	90	19	30.6
Cape Sherard	1	74	31	57.3	80	15	27.6
Cape Strathcona	22, 25	73	13	0.0	85	10	0.0
Cape Walker	12	74	4	40.4	97	34	2.4
Cape Walter Bathurst	32	73	20	0.0	76	40	0.0
Cape Warrender	1	74	24	38.1	81	46	19.8
Cape William Herschel	4	74	34	38.4	89	11	23.2
Cape York	20	73	47	0.0	87	0	0.0
Cheyne Point	6	74	29	58.7	95	13	34.7
Cornwallis Island	5-7	75	16	20.0	95	47	39.5
Cornwallis Island		74	51	21.1	94	3	24.8
Creswell Bay	16	72	41	44.1	93	20	51.5
Creswell River	16	72	51	5.5	93	26	54.4
Croker Bay	2	74	48	13.8	83	26	6.4
Crozier Island	7	75	47	45.0	96	26	44.8
Crozier Strait	7	75	32	29.4	97	5	58.9
Cuming Inlet	2	74	37	14.2	85	0	49.0
Cunningham Inlet	13	74	6	35.3	93	50	2.2
Cunningham West Glacier	1	74	39	5.9	81	39	11.3
Davids Island	24	72	19	55.1	85	5	35.6
Dealy Island	10	74	53	27.8	109	15	6.8
Deep Cove	29	72	10	54.3	80	22	29.4
Devon Island	1-5	74	45	32.4	81	45	47.8
Devon Island		74	54	3.5	91	47	37.0
Devon Island		74	46	21.1	84	41	56.5
Devon Island		75	5	48.9	88	34	42.9

INDEX OF PLACE NAMES

Place Name	Operational Map Number	Latitude deg	min	sec	Longitude deg	min	sec
Devon Island		74	46	26.0	90	16	0.2
Devon Island		74	45	29.0	86	54	14.9
Domett Point	10	76	1	39.0	107	32	25.7
Drake Bay	11	73	38	52.6	101	4	55.9
Drake Point	10	76	27	35.6	108	18	4.2
Dundas Harbour	2	74	30	21.1	82	33	37.9
Dyers Cove	6	74	37	5.2	95	40	28.1
Eardley Bay	20	73	50	13.8	87	23	1.6
Eclipse Sound	28, 31	72	41	9.9	79	31	11.1
Eclipse Sound		72	39	19.3	79	4	37.7
Elwin Bay	15	73	31	24.2	90	53	14.3
Elwin Inlet	26	73	27	18.9	83	55	18.2
Emmerson Island	31	72	27	52.1	78	54	41.9
English Bay	25	73	4	49.4	84	16	1.9
Eqalulik River	23	72	38	29.3	85	39	49.9
Eqeperiaqtalik Point	31	72	30	36.3	78	44	52.3
Erebus Bay	5	74	45	17.6	91	43	53.1
Erik Harbour	34	72	36	58.7	76	6	38.2
Eskimo Inlet	29	72	17	36.6	80	9	15.9
Fabricius Fiord	24	72	22	4.4	84	44	14.1
Fearnall Bay	16, 17	72	26	29.2	93	46	6.7
Fellfoot Point	4	74	30	15.9	88	46	41.1
Fitzgerald Bay	18	72	8	56.1	89	49	28.3
Fleming Inlet	24	72	26	51.5	84	43	47.9
Fleming River	24	72	30	58.5	84	19	41.2
Forsyth Point	11	73	43	59.1	99	1	17.9
Fort Ross	17	71	59	12.1	94	15	36.3
Freemans Cove	7, 9	75	8	36.2	98	1	13.5
Fury Beach	16	72	47	10.6	91	50	23.1
Fury Point	16	72	40	59.9	92	16	32.3
Garnier Bay	14	74	1	25.6	92	2	31.3
Garrett Island	8	74	42	34.0	98	23	17.7
Gascoyne Inlet	5	74	43	43.1	91	25	40.2
Giants Castle	22	72	48	9.3	86	54	17.6
Gifford Point	13	74	10	46.3	94	4	39.5
Gourdeau Point	8	74	26	12.2	97	40	52.9
Graveyard Point	22, 25	73	9	9.1	85	20	49.0
Griffith Island	6	74	31	3.6	95	51	18.6
Guys Bight	34	72	38	59.4	76	37	55.7
Hamilton Island	8	74	12	6.5	99	4	45.8
Harding Point	10	75	9	18.6	101	26	53.3
Hazard Inlet	17	72	2	26.9	93	58	46.2
Hobhouse Inlet	3	74	27	53.0	87	5	16.3
Idlout Point	16	72	43	50.9	93	42	31.5
Iglurjuaq Island	23, 24	72	2	49.0	86	12	47.1
Ikpikittuarjuk Bay	24	72	8	17.3	84	20	23.8
Innes Point	5	74	47	14.2	92	18	7.1
Intrepid Bay	6	74	58	31.7	96	18	50.4
Invincible Point	10	76	16	14.3	107	56	11.6
Ipitalik Peninsula	29	72	12	19.3	80	32	17.3
Irvine Bay	13	74	5	16.3	92	42	55.0
Jackson Inlet	20	73	16	0.0	88	55	0.0
Johnson Bay	2	74	29	45.2	82	22	0.4
Johnson Harbour	25	72	58	53.2	84	52	1.0
Kakiak Point	22	72	40	40.1	86	38	31.3
Kearney Cove	4	74	44	14.9	90	44	10.2
Key Point	10	76	10	6.8	105	12	48.4
King Point	10	75	27	14.4	105	31	37.0
Koluktoo Bay	29	72	4	11.2	80	56	29.8
Krabbe Point	11	74	3	1.0	99	2	50.6
Lacey Point	7, 9	75	17	26.4	97	48	27.9
Lancaster Sound	1-5, 14,	74	10	19.0	85	36	5.1
Lancaster Sound	14, 21,	74	23	44.8	89	21	21.4
Lancaster Sound	26, 27,	74	6	18.7	91	11	7.2
Lancaster Sound	33	73	53	56.5	84	41	40.4
Lancaster Sound		74	26	14.2	83	19	55.7
Lane Point	7	75	24	38.0	96	32	46.0
Langley Point	10	75	10	46.6	103	29	48.0
Lavoie Point	28	72	43	52.2	80	9	44.9
Lavoie Point	28	72	38	19.9	80	27	33.7
Levasseur Inlet	23, 24	72	34	38.4	85	41	15.8
Limestone Island	13	74	2	32.2	95	30	29.0

INDEX OF PLACE NAMES

Place Name	Operational Map Number	Latitude deg	min	sec	Longitude deg	min	sec
Little Cornwallis Island	7, 9	75	29	49.8	96	58	49.9
Lone Island	25	73	3	54.9	84	18	18.0
Longford Point	10	75	38	58.4	103	58	23.7
Low Point	28	73	9	11.8	80	30	46.9
Lowther Island	8	74	28	46.2	97	36	7.0
Lyall Point	10	76	37	59.9	105	16	10.0
Lyons Point	12	73	51	14.9	97	9	12.4
Mala River	28	72	57	38.2	81	2	23.4
Maria Point	10	76	25	2.4	105	27	36.7
Markham Point	7, 9	75	26	55.4	97	46	10.9
Marshall Peninsula	7	75	24	39.8	96	3	39.0
Maud Glacier	33	73	33	20.9	79	22	55.0
Maxwell Bay	4	74	38	10.6	89	0	27.1
McBean Bay	18, 19	72	41	32.8	89	26	34.3
McClure Bay	12	73	37	18.7	95	43	27.6
McDougall Sound	7, 9	75	10	49.1	97	21	27.3
McDougall Sound		74	58	18.2	98	9	32.7
Melville Island	10	75	14	26.9	110	9	31.3
Milky Bay	29	72	12	32.3	80	17	9.4
Milne Inlet	29	72	28	43.2	80	34	57.5
Milne Island	7	75	39	34.6	97	11	58.4
Moffet Inlet	24	72	16	32.8	85	8	41.6
Moffett Inlet		72	10	46.6	84	42	28.6
Mt. Herodier	31	72	45	0.0	77	35	0.0
Nanisivik	25	73	2	0.0	84	32	0.0
Navy Board Inlet	27, 28	73	49	5.7	81	22	39.3
Navy Board Inlet		72	57	30.8	80	25	27.9
Nelson Griffiths Point	10	75	4	8.5	105	54	24.9
Nunatsiaq Point	27	73	24	55.1	81	30	39.8
Oliver Sound	30	72	25	12.9	78	44	47.9
Oliver Sound	31	72	6	44.8	77	10	44.1
Paquet Bay	30	72	5	0.0	78	30	0.0
Paquet Sound	30	72	7	52.9	78	39	8.3
Peel Sound	12, 13	72	46	46.8	96	17	45.1
Peel Sound		73	45	49.8	96	33	32.6
Philpots Island	1	74	57	29.0	79	54	40.9
Pioneer Bay	6	74	57	28.6	96	32	52.7
Pisiktarfik Island	28	72	34	56.0	80	21	1.8
Playfair Point	10	75	19	6.2	101	46	26.4
Polaris Bay	7, 9	75	20	57.8	97	6	6.5
POND INLET	31	72	39	10.8	77	55	13.2
Pond Inlet	28, 31	72	45	6.0	76	34	44.7
Pond Inlet	32, 34	72	45	56.3	78	23	45.6
Pond Inlet		72	50	43.8	78	9	52.8
Port Bowen	19	73	14	0.0	89	0	0.0
Port Leopold	14	73	51	34.7	90	20	35.7
Port McNeill	19	73	9	0.0	89	10	0.0
Powell Inlet	3	74	38	59.1	85	24	40.3
Pressure Point	12	73	57	19.6	96	12	6.7
Prince Leopold Island	14	74	6	30.2	90	13	19.6
Prince of Wales Island	11, 12	73	9	13.2	99	20	55.0
Prince of Wales Island		73	43	45.5	98	4	40.1
Prince of Wales Island		73	44	9.8	100	38	37.3
Prince Regent Inlet	14-20	72	11	32.1	93	33	0.8
Prince Regent Inlet		72	22	7.5	90	41	57.1
Prince Regent Inlet		73	14	52.9	90	52	41.3
Prince Regent Inlet		72	54	40.3	90	18	37.4
Prince Regent Inlet		72	35	45.7	92	38	18.2
Prince Regent Inlet		71	43	34.9	92	7	24.9
Prince Regent Inlet		73	34	34.1	89	13	33.7
Pullen Strait	7	75	29	6.0	96	1	12.2
Pusingnajojaq Hill	23	72	5	37.7	86	38	19.4
Qikirtaukkat Islands	22	72	54	23.5	85	55	57.5
Radstock Bay	4	74	45	6.2	91	4	11.0
Ragged Island	29	72	29	13.7	80	14	0.7
Rea Point	10	75	21	48.5	105	49	30.0
Reliance Bay	11	73	52	27.7	100	24	26.8
RESOLUTE BAY	6	74	42	2.2	94	50	14.1
Resolute Bay	6	74	39	27.1	95	3	37.5
Resolute Passage	6	74	41	16.9	95	49	17.5
Robertson Point	10	75	8	1.9	107	16	23.7
Russell Island	11, 12	74	1	39.8	98	10	14.5

INDEX OF PLACE NAMES

Place Name	Operational Map Number	Latitude deg	min	sec	Longitude deg	min	sec
Russell Island		73	53	20.6	99	1	8.9
Sabine Peninsula	10	76	18	7.1	110	0	33.1
Salmon River	31	72	33	33.4	77	39	46.5
Schomberg Point	10	75	28	19.1	103	43	44.3
Sheringham Point	6	74	44	45.9	95	45	48.0
Ship Point	21, 26	73	23	36.4	84	54	5.5
Silt Point	25	73	6	8.8	84	31	10.2
Skene Bay	10	74	59	11.5	107	52	55.7
Somerset Island	12-17	72	51	54.8	92	45	28.1
Somerset Island		73	46	39.2	94	19	13.0
Somerset Island		72	21	11.3	94	41	55.5
Somerset Island		73	22	9.7	92	12	19.0
Somerset Island		73	28	28.9	93	17	28.1
Somerset Island		73	48	37.2	91	41	0.0
Somerville Island	6	74	44	8.5	96	37	6.0
Stanley Head	7	75	11	53.1	96	39	24.6
Steensby Peninsula	23, 24	72	10	30.2	85	20	56.1
Steensby Peninsula		72	10	30.2	85	20	56.1
Stephens Headland	23, 24	72	33	10.7	85	53	13.2
Strathcona Sound	25	73	5	57.4	84	48	31.2
Stratton Inlet	3	74	32	30.5	86	46	17.5
Success Point	10	76	29	26.3	106	1	22.9
Tay Bay	27	73	30	52.7	80	56	23.1
Tay Sound	30, 31	72	0	52.2	79	5	27.8
Tay Sound		72	13	1.1	79	12	10.3
Tremblay Sound	29	72	30	37.4	80	45	5.1
Truro Island	7, 9	75	18	28.1	97	8	12.9
Tugaat River	29	72	2	45.8	80	19	7.3
Turner Cliffs	22	72	59	39.3	86	35	51.4
Two Rivers Bay	15	73	1	15.7	91	35	12.6
Uluksan Peninsula	22, 25	73	3	45.3	85	26	11.6
Union Bay	5	74	45	40.3	92	7	54.3
Union River	16	72	42	57.8	94	21	12.4
Victor Point	22, 25	73	8	8.2	85	39	39.7
Viscount Melville Sound	10	74	5	51.3	108	44	40.3
Vista River	23	72	41	30.6	86	53	22.6
Wellington Channel	5	74	57	7.7	93	4	5.0
Whaler Point	14	73	50	40.2	90	13	23.3
White Bay	29	72	19	12.4	79	35	48.8
Wollaston Islands	27	73	44	10.8	81	6	55.5
Yeoman Island	23, 24	72	19	37.0	86	5	25.7
Young Island	8	74	21	0.9	98	59	24.4